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Citizens' engagement in smart city development, Case study: Mobility Point Project	

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In memory of my Mom
and to my dad
with love and eternal appreciation

Acknowledgement

There is a feeling in whatever we write, the moment that we press a button on a keyboard or start the flowing of ink on a paper or distribute the dust of a chalk in the air on a blackboard. It does not matter if it is an academic work, a letter to a friend, family, an unknown person or a note on a napkin in a restaurant, that we write it and leave it. The presence of that feeling stays in that writing forever and we feel it whenever we get the chance to read it.

I did this writing during the saddest and toughest time in my life. I lost my Mom due to cancer and my dad was struggling with cancer and because of Covid 19 I did not have a chance to meet them. I could not finish this thesis if I did not have the support of my adorable and knowledgeable supervisor, Dr. Marte C.W. Solheim. She was not only a supervisor but also a great friend during this hard time. I like to express my heartfelt thanks to her for being with me during this journey and helping me not to give up. I finally made it and what you will read in following pages is the result of my work. I also like to thank interviewees who gave me their time and shared their ideas with me. Without their input I could not finish this research.

Coming to Norway a few years back and studying in UiS business school was a great opportunity for me and I learned a lot during the period of being student in this school. Since by submitting this course, I am closing this chapter of my life, I like to thank all the lecturers heartfully with whom I filled the pages of this chapter wonderfully, Prof. Gorm Kipperberg, Prof. Tatiana A. Iakovleva, Prof. Rune Dahl Fitjar, Dr. Elisa Thomas, Dr. Niaz Bashiri, Prof. Jan Frick, Prof. Yuko Onozaka, and Prof. Ragnar Tveterås. I also like to thank Anne Lin Brobakke for being always available to answer my questions. Maybe one day I can pay all your kindness back.

Leila Beig

Summary

This thesis aims at describing Stavanger city experience in citizens' engagement for developing a mobility point in Hillevåg square, an area in Stavanger, Norway. Getting insight from existing models of citizens' engagement in developing smart cities, and adopting a qualitative descriptive case study, I focused on finding the answer to two main questions; *how* citizens' engagement has been in the mobility point project and *why* it is as it is. To find out various dimensions describing citizens' participation in a smart city project, I proposed a conceptual model based on literature review and by using pattern matching technique, I explained how my finding matches, differentiates or adds to the theory. The conceptual model includes five constructs: main actors' understanding of the project, form and level of citizens' engagement in the project, role of citizens and activities regarding citizens' engagement.

To find the answers to the research questions, I interviewed 12 persons, including (a) four individuals in municipality of Stavanger, (b) two individuals from private companies (c) two individuals from Kolumbus and (d) four citizens.

Findings of this research shows that Stavanger municipality and Kolumbus has been the main actors of this project who were aiming at changing the behavior of citizens towards use more public transport, use less car to reach one of the city goals which has been less CO_2 emissions. For that purpose, citizens' role has been consumer, data point, learner. Their actions include giving feedback, consume, being steered, and nudged. Although the municipality tried to involve the citizens in the project, and there is a questionnaire posted in the square that citizens can scan the barcode and share their experience, levels of citizens' engagement has not gone further than non-participation and consumerism and barely tokenism level. When it comes to form of citizens' participation, citizens were involved with the lowest forms of participation, choice and manipulation in which citizens have access to different options of public transport provided for them in mobility point in Hillevåg to choose from.

Some of the reasons of this combination of citizens' engagement are, not considering citizens as one of the main actors, "to the people," ideology rather than "with the people" ideology, unaligned understanding of the project and lack of process or structure for collaboration among different actors.

Keywords: Sociocratic approach, technocratic approach, Citizen-centric smart cities, citizen engagement, citizen participation

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1. Introduction

As of today, 50.6% of the world's population is living in urban areas (Caragliu & Del Bo, 2012). By 2025, it is expected that 4.6 billion people, around 58% of the world's population (Glasmeier & Christopherson, 2015), and by 2050, 69.6% (Caragliu & Del Bo, 2012) will live in cities. This will pose serious challenges for city planners in providing basic city services to residents in a sustainable manner (Glasmeier & Christopherson, 2015). To make cities livable and sustainable and improve public services, many cities have started to use new technologies and smart city solutions. Over 26 Global Cities are expected to be smart cities in 2025, with more than 50% of them from Europe and North America (Glasmeier & Christopherson, 2015).

Caragliu and his colleauges define a city to be smart "when investments in human and social capital as well as traditional communication (transport) and modern communication (ICT) infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance" (Caragliu et al., 2011, p. 70).

Making smart cities needs the collaboration of different stakeholders in various levels such as policy makers, information technology companies, academics as well as citizens. Each of these groups of stakeholders have different definitions, interests and visions for developing a smart city that needs to be taken into account. There has long been a tension in smart city literature that smart cities are serving more "global elites" and huge IT companies than citizens ((Hollands, 2008), (Hollands, 2015), (Cardullo & Kitchin, 2018), (Kitchin & Moore-Cherry, 2020), (Kitchin, 2015), (Caragliu & Del Bo, 2012)).

If a city aims at serving citizens who live in the city by fulfilling their needs, it is of importance that citizens' engagement be considered as a part of development and improvement of smart city plans (Goodspeed, 2015). Goodspeed believes that citizens' engagement in developing smart cities is important due to several reasons. First of all, urban problems are 'wicked' problems not engineering (Goodspeed, 2015). In wicked problems, due to the dynamism of the interactions among the elements of a system, system outcomes become unpredictable and difficult to control (Anttiroiko, 2016) and since they take place in a unique contexts, it is difficult to accurately test solutions (Goodspeed, 2015). Smart city projects are not exceptions, they also contain wicked problems (Goodspeed, 2015). IT-enabled collaborative planning (Goodspeed, 2015), participatory and deliberative models of governance (Anttiroiko, 2016) are different alternative to solve such problems, not pure technical solutions as it is believed by advocates of technocracy (Cardullo &

Kitchin, 2019). In this way, technical analysis can be integrated into a discussion among different players on why, what and how the solution should be planned and executed, hence cities can make sure that more diverse visions and perspective have been taken into account (Anttiroiko, 2016). Secondly, building smart cities is also costly and often funded by public tax dollars. By 2025 the global market for smart city technology has been estimated to worth $2.4 trillion dollars (Allied Market Research 2019) as quoted in (Goodman et al., 2020). In addition to the "public footing the bill", the central goal of smart development, as stated by private firms and public administrators in their plans, is to improve the life quality of residents (Goodman et al., 2020). The cost of smart technology, along with the fact that residents are the main beneficiaries, make public engagement more vital to make sure that the public perspectives are represented in development (Goodman et al., 2020).

Last not least, public engagement efforts in smart city projects is also necessary to improve the democratic control of urban technology projects (Goodspeed, 2015) rather than a city being dominated by corporate interests, and public space being sacrificed to service the needs of multi-national companies not its citizens (Hollands, 2008). In response to this criticism, cities and private companies have started to redefine their activities with a citizen-centric view.

Recently in several papers scholars started to explore and examine different dimensions which contribute to citizens' participation and making a city not *for* the citizens but *with* the citizens and *by* the citizens ((Goodman et al., 2020), (Gohari et al., 2020), (Levenda et al., 2020) (Cardullo & Kitchin, 2018), (Malek et al., 2021), (Simonofski et al., 2018)). However, when it comes to articles about citizens' participation in smart city projects in Norway, it seems that there is only one paper performed in city of Trondheim by Gohari and his collages (For more information please see (Gohari et al., 2020)). This thesis aims at describing Stavanger city experience in citizens' engagement for developing a mobility point in Hillevåg square, an area in Stavanger, Norway. To reach that purpose, the focus will be on two main questions, how citizens' engagement has been in the mobility point project and why it is as it is.

There are some reasons that I chose this subject for my thesis. First of all, because of the importance of citizens engagements' subject in smart city development as it was explained above. Besides, this type of research is very context dependent and we cannot easily generalize the conclusions of a research to different cities. For example, we cannot generalize or apply the findings or lesson learned about citizens participation in Barcelona or Trondheim to Stavanger.

Smart city in each city is formed in its own context, even each project as a part of smart city development has its own context. Lesson learned from a project in transportation domain cannot be easily generalized to a project in health area for example. Therefore, it is very important that before any interpretations about citizens' engagement in developing a smart city or any suggestions, the related dimensions be explored and described. The findings of this thesis as the first thesis about citizens' engagement in Stavanger smart city, will give awareness, understanding and knowledge about different dimensions of citizens' engagement in one of the smart city projects, mobility point. Hence, it has the potential to make the actors who has or has not been involved in the citizens' engagement process, aware of different actors' understanding of a smart city in terms of definition and goals of a smart city, citizens' engagement and its importance, as well as motivations and expectations of engagement. Moreover, by uncovering the role of the citizens in this project, form and level of their engagements, and activities that citizens could do and have done, main actors' become aware of how much their approaches match or mismatch their practices in this project. This knowledge can be contextualized and used for planning citizens' engagement processes in other projects in Stavanger. In terms of theory, this thesis gives a good understanding of different approaches of smart city development, different forms of cities and different form of citizens' engagements by presenting a literature review on the subject. The proposed conceptual model in this thesis can also give some insights and get contextualized and used by other researchers for reviewing citizens' engagement in other similar cases.

2. Literature review

In this section, three main topics was reviewed, 1) human-centric and technology-centric views toward smart city development, 2) technology-centric versus citizen-centric smart cities and 3) citizens' engagement models for developing smart cities.

2.1. Different approaches in developing smart cities

By observing different cities moving toward smartness, Noori identified four different approaches, "technocratic", "sociocratic", "innocratic" and "aristocratic" (Noori et al., 2020).

"Technocratic" and "aristocratic" are both top-down approaches. Thoughts such as being first, being best, best government services, and branding rules these two approaches. Both are technology-oriented, fast, and non-inclusive in terms of citizens' inclusion in development process ((Noori et al., 2020), (Lee et al., 2020)). Projects such as Songdo in South Korea, Masdar in United Arab Emirates, Living PlanIT Valley in Portugal so called "smart cities from scratch" as well as Dubai smart city fall into this category (Noori et al., 2020).

In technocratic approach, focus is on technology optimism, and a smart city is developed in an area without any previous infrastructure to make the development process more flexible to change(Noori et al., 2020).. In contrast, while aristocratic approach has the same focus, government uses technology to improve the city's services, citizens trust the government, accept the changes, and follow them(Noori et al., 2020). There is no involvement of citizens in both approaches and citizens are considered as users and consumers of the services.

Next two approaches, "sociocratic" and "innocratic" are both bottom up. In "sociocratic" approach, the focus is more on democracy, citizen empowerment through technology, participation and Co-creation. In contrast, the goal of "innocratic" approach is more the promotion of local innovation and entrepreneurship (Noori et al., 2020).

Barcelona is an example of "sociocratic" approach, in which the city tries to be citizen-centric, and more inclusion-oriented (Lee et al., 2020). "Innocratic" approach is very similar to sociocratic approach, but the difference is that in "innocratic" approach a specific group of citizens (local entrepreneurs and local company members) is more taken into consideration than all the citizens. Taking any of these approaches results in a different sort of city, technology-centric or citizen-centric smart city.

2.2. Technology-centric versus citizen-centric smart cities

Technology-centric smart cities usually initiate by governments or information technology companies and stress more on the importance of economic competitiveness, city branding and monetary profit. Technocratic approach that is the approach in developing such cities brings opportunity in terms of profit to companies, particularly IT giants such as Sisco and IBM. Technocratic governance, technological improvements, and efficiency are the results of this approach (Borkowska & Osborne, 2018).

Public authorities employ technology to monitor/control the city with easy-to-use visualization tools. They are aiming for increasing the sustainability with optimized services, driving economic development, innovation, and global city investment competitiveness.

In this approach, based on a "technological solutionist" mindset, the problems of a city are formulated as technical problems and it is presumed that all the city problems can be tackled through technological solutions (Morozov, 2013) as quoted by Cardullo and Kitchin (2019).

With this approach comes three major societal-related issues (Carvalho, 2015). First, although this approach makes it possible to attract a considerable number of technology firms and research units in a short period of time, however, interaction among localized players does not happen at the same pace. Second, testing the solutions on socially heterogeneous users will be more difficult which at the end will limit the 'real-life' context of the experiments. Third, these cities stress less on social and equity dimensions of sustainability than environmental and economic dimensions (Carvalho, 2015). In other word, since citizens are not a part of neither decision making, nor developing, and implementation process of smart cities, consequently it is very probable that serious urban problems like inequality, marginalization, and poverty would not be a part of smart city agenda in meetings, which leads to further marginalization of disadvantaged citizens and polarization in the city due to ignoring social needs which has not even being discussed (Kempin Reuter, 2019). Moreover, as there is not any participation expected from citizens at the early stage and "smart citizenship or citizen" is not a part of smart city agenda, citizens will be transformed to passive and unconscious supporters or followers in smart city development journey. In other word, citizens are seen as consumers, customers, users, "inforges" or information entities (Floridi, 2015) and "mute collectors of data" (René Glas, 2019).

In addition, since it is the citizens who must adapt to smart city living to take advantage of it, the lack of necessary requirements for using smart city advantages such as technology literacy, access

to broadband internet and high-end sensing devices contributes to polarization as well if some part of the city cannot afford it or do not have access to such requirements (Kempin Reuter, 2019).

In contrast, in citizen-centric smart cities social and human aspects play a critical role in developing smart cities (Borkowska & Osborne, 2018). The core assumption of this approach is that "citizens and civility" should be at the core of smart city initiatives, rather than capital and the market (Cardullo & Kitchin, 2019).

In this approach, main purpose is to improve the quality of life of citizens while finding a balance between efficiency and equity (Batty et al. 2012). Technology is used by public authorities more to understand the city and city needs than to monitor the city. Citizens have an active role in this context and authorities seek to make a more informed, active, and inclusive citizenry (Ranchordás, 2019).

Since smart city tends to serve the interests of citizens, rather than interests of state and market, therefore, technology is used to solve the difficulty in matching citizens' needs with public services, improving the quality of these services, and making government requests more effective (Ranchordás, 2019). Besides, technology is considered as a means to empower citizens to collaborate with public authorities, and engage in the governance of the city, co-creation of public services, and management of public goods (Ranchordás, 2019).

When it comes to the role of citizens, they are conceived as 'smart citizens' not consumers or users within a marketplace of services in which elites decide what is best for them. To make mentioned concept realized, there is a need to have an inclusive framework for citizen to participate, collaborate, and co-create in the process of smart city development rather than just taking citizens' consumption engagement (Cardullo & Kitchin, 2019). As a result, is expected that more normative concerns such as fairness, equity, democracy, and social justice would be central in this stage due to having more citizens participating in the process.

In the next section, I will review the importance of citizen engagement in smart city development as well as various models/framework presented by different scholars aimed at fulfilling this purpose.

2.3. Citizen's engagement in developing smart cities

Bull believes that participation is different from engagement (Bull, 2020). Participation refers to processes which allow people to actually participate in a decision by expressing their views, in contrast, engagement goes further by making a two way process of discussion and dialogue between different parties (Bull, 2020). While there are different definitions from various perspectives about citizen's engagement, it is generally characterized as the process of participating in decision making, especially if the results of decisions directly or indirectly affect individuals, or groups (Elelman & Feldman, 2018).

Citizens' participation in government planning is associated with the early debates about participatory and deliberative democracy and was defined, critiqued, and revised long before smart city development. In participatory democracy with the aim of giving decision-making power to citizens, participation is used as a tool for citizens to have control over the decisions influencing their lives (Gohari et al., 2020). In contrast, in a deliberative democracy, focus is on trading off different parties' interests, ideas, and arguments, than on direct decision-making power (Gohari et al., 2020). The first historical signs of citizen engagement can be traced back to the time where citizens voted to choose a representative to be citizens' voice and negotiate public interests (Goodman et al., 2020). In this form of participation, voting, citizens have an indirect and passive role. Direct and active participation of citizens can be realized in participatory democracy by which citizens are empowered to play an active role in making decision about their present and future life in cities. In the next section, I have reviewed different engagement models.

2.4. Citizen engagement models

While there have been several research conducted about the perspective of academia, IT companies and public administration about smart city (Ranchordás, 2019), (Luque-Vega et al., 2020), (Clever et al., 2018), (Coletta et al., 2018) there is only one paper directly seeking for citizens perspective towards smart city concept and probable future. In "Where's Wally? In Search of Citizen Perspectives on the Smart City", Thomas and his colleagues try to do a fieldwork research in the streets of three cities in the UK, London, Manchester, and Glasgow, to explore citizen's perspective and prioritized issues for future smart cities (Thomas et al., 2016). The result of this research shows that each citizen proposed a unique vision about smart city. While one of the citizens thinks that technology is a key drive for future development, others believe that if this

happens their lives could be very dependent on technologies. In another case, a citizen found technology making shopping experience more valuable; another citizen thought it is better to use technology to tackle health issues which city encounters. Some of the citizens mentioned that in future, we might see a lot of advancement in technology, but it does not mean that it will make us happier. Some of the respondent reflected that traffic is an important urban issue, but poverty and inequity are more important urban issues which needed to be addressed urgently (Thomas et al., 2016).

Looking at the history of citizens' engagement in urban planning takes us to one of the first models about participation form and functions presented by Sarah C. White. In her model she introduced four types/forms/functions of participation: (1) "nominal participation" which functions as a "display" to give legitimacy to decisions; (2) "instrumental participation" functioning as "means", through which community assets and human capital are utilized to reach a pre-defined goal; (3) "representative participation" which functions as a "voice" gives community members a voice in the decision-making; and (d) "transformative participation" functioning as "power", results in the empowerment of the community to play an active role for their favorite change (White, 1996).

In her research, White also shows how various interests of people and communities and urban planners contribute to shaping different modes of participation. In nominal participation, while people are looking for inclusion, policy makers' interest in participation of citizens is to attain legitimacy to their decisions. In contrast, in instrumental type and representative of participation, citizens are interested in reducing the costs and leveraging and planners aim for more efficiency and sustainability respectively. It is only the last type of participation, transformative, in which citizens have active participation and both sides look for empowering each other (White, 1996).

Comparing to White's paper which is reflecting more a theoretical view, in IAP2 Spectrum of Public Participation developed by the International Association for Public Participation (2018), a useful analytical framework for understanding levels of public engagement and their possible impact has been provided. Five levels of engagement have been outlined in this model. (1) informing public by using fact sheets and websites; (2) consulting via surveys, focus groups, or public meetings, (3) involving through workshops, (4) collaborating by leveraging participatory decision making and consensus building, or (5) empowering by enabling residents as decisionmakers (Goodman et al., 2020). While with each level, the potential impact of engagement increases, empowering, puts decision making in the hands of the public which is more in line with

deliberative democratic ideals. The IAP2 Spectrum has been acknowledged as an international standard (Hasler 2017); and at the municipal level in Canada many communities have consulted or drawn upon this model to varying degrees (e.g., City of Hamilton 2018; City of Ottawa 2018), especially in contexts where technology is being adopted (Goodman et al., 2020).

Another model which has been widely used in smart city research ((Cardullo & Kitchin, 2018), (Gohari et al., 2020), (Levenda et al., 2020)) is Arnstein's "ladder of participation" (Bull, 2020). This model which was originally formulated in the context of poverty reduction programs, focuses basically on "power redistribution" (Levenda et al., 2020). Arnstein's conceptual ladder contains eight steps each corresponding to different levels of citizens' participation and power. Lower levels include 'nonparticipation' ('manipulation' and 'therapy'), takes a top-down approach and it is tried to lead, and control individuals. In 'tokenism' ('informing', 'consultation', and 'placation'), while people have voice and some degree of autonomy, they are not able to change pre-made decisions. The final three levels ("partnership", "delegated power" and "citizen control") concern 'citizen power'. In 'partnership', citizens have the power to play an active and collaborative role in decision-making. In 'delegated power', citizens have full power over decision-making; and, in 'citizen control' level, citizens not only make decisions but also they have full control over situation (Cardullo & Kitchin, 2018).

In order to fit in the smart city topic, Cardullo and Kitchin (2018) modified Arnstein's model by adding one more rung between'Non-Participation' and 'Tokenism' rungs, as "consumerism" included "choice" and called it a scaffold of smart citizen participation. By adding this level, they wanted to show how city services and infrastructures are being increasingly "marketized (treating citizens as customers)" and "privatized (corporations own key city assets and performing many key roles)" and citizen are considered "consumer", choosing which services to acquire from the marketplace of providers or live in a 'smart building' if they can afford it. They also added four columns to the ladder. The first column addresses the "role" of citizensin a smart city from passive roles as user and consumer to leader roles as decision makers. The second column shows the "form of citizen involvement" from being controled to have the ownership and leadership. The third additional column refers to the "political discourses" such as social rights, capitalism or patenalism. The final additional column is the "modality" which refers to the approach taken in developing smart cities such as top down or bottom up (Cardullo & Kitchin, 2018).

Cardullo and Kitchin (2018) used this model to measure smart city inclusion, participation and empowerment in smart city initiatives in Dublin, Ireland. They found out that examples of citizen power, where power is delegated and initiatives are co-created with citizens, are limited and difficult to identify and the majority of the smart city projects can be characterized as top-down engagement, falling into the categories of non-participation, consumerism, or tokenism (Cardullo & Kitchin, 2018).

A number of scholars used this model to explore citizens' engagement in different cities. Gohari and his colleagues used scaffold model and attempted to explore the approaches and practices in a smart city project, called "+CityxChange" conducted in Trondheim, Norway (Gohari et al., 2020). They found out that there is a mismatch between citizen centric approaches and practices in this project. While the university and municipality have aimed to follow a co-creating approach and ensure democratic legitimacy, their practices are more instrumental. They identified the dependency of the project on EU competitive funding which makes goal setting of the project happen before any engagement of neither citizens nor their representatives, as one of the main reasons of this mismatch which ended up with leaving no room for citizens' influence (Gohari et al., 2020).

Making a two dimensional model by adding "public" as another dimension to scaffold model, Levenda proposed a new conceptual framework for exploring citizen engagement in smart city projects (Levenda et al., 2020). In this model, first dimension, a vertical axis, shows citizen participation based on scaffold model going from nonparticipation up the rungs to citizen power, and second dimension, horizontal axis, shows the public dimension, from predetermined publics to emergent publics. Considering public as a "dynamic concept", they refer to Dewey's definition about public in 1946 as follows. "Public consists of all those who are affected by the indirect consequences of transactions, to such an extent that it is deemed necessary to have those consequences systematically cared for. Since those who are indirectly affected are not direct participants in the transaction in question, it is necessary that certain persons be set apart to represent them and see that their interests are conserved and protected" (Dewey, 1946) quoted in (Levenda et al., 2020). In brief, his idea is that in smart city projects, predetermined public as the known stakeholders is expected to be defined, but it is very important to know that during the executing the projects new stakeholders might emerge as emergent public, and developers need to be aware of this matter and make sure in different stages public is accurately involved.

Apart from the models and frameworks presented for measuring citizen participation in city scope, Kaulio (1998) proposed three different approaches in product development which is also relevant to this research. These approaches include "design for users", "design with users", and "design by users".

While "design for" addresses a product development approach in which products are designed on behalf of the customers and users' data, and models of customer behavior are used as a knowledge base for design, in "design with", in addition to users' data showing customer preferences, needs and requirements it includes display of different solutions and asking for users' feedback for improvements. In contrast, "design by" in which customers are actively involved and participate in the design of their own product, users have more control development of the product (Kaulio, 1998). This approach is applicable in smart city projects context as well to see how end product of smart city projects have been planned and developed "for citizens", "with citizens" or "by citizens" which implies how deeply citizens have been engaged in planning and execution processes and what type of role they have been playing.

Going beyond models and framework, and by using a similar classification approach as was mentioned above, Malek et al. (2021) introduced two citizen-centric ideologies "to the people,", and "with the people". "To the people," ideology refers to a situation in which authorities use technology to meet the needs of the people, and "with the people," shows a collective thinking of the authorities, technological corporations, and the people when resolving urban issues (Malek et al., 2021). Based on these ideologies, they found out that understanding of participation in smart city programs, types of participation, processes of participation, roles of citizens, and their characters constitute the main elements of citizens' participation (Malek et al., 2021).

In addition to mentioned studies, Simonofski et al. (2018) also proposed a framework called "CitiVoice" in which they categorized citizens into three groups: democratic participants, co-creators and ICT users. First group have active involvement either as "consultants" suggesting ideas with no impact on decision-making and "co-decision makers" with decision making power. Second group, co-creators, help the solution developers to make better solutions and increase the level of acceptance of those new solutions (Simonofski et al., 2018). Citizens as ICT users play a role of using technology proactively and have no power in decision making or developing the solutions (Simonofski et al., 2018).

By compiling above mentioned models and frameworks, I found out that type or form of engagement, level of engagement, role of citizens and their actions are key dimensions shaping citizens' engagement in smart city development. Table 1 lists these models and their main constructs according to these four groups.

Since Gohari et al. (2020) and Levenda et al. (2020) used Cardullo and Kitchin (2018) model in their research, I have not included these two models in the Table 1.

Table 1 Citizen's engagement models (Author's own synthesis)

Title	Reference	type/form	role	Actions	level
CitiVoice as a participation dashboard (Smart city development in Namur, Mons and Brussels, Belgium)	(Simonofski et al., 2018)	Not included in the model	Democratic participants Co-creators ICT users	Not included in the model	Not included in the model
Scaffold model of smart citizen participation (Smart city development in Dublin, Ireland)	(Cardullo & Kitchin, 2018)	Citizen control Delegated power Partnership Consultation Information Choice Manipulation	Leader Decision maker Co-creator Proposer Tester, participant Informant Consumer Data point, learner	Leadership, ownership Negotiate, produce Suggest Giving feedback Consume Steered, nudged and controlled	Citizen power Tokenism Consumerism Non-participation
IAP2 Spectrum (Smart city development in Hamilton & Ottawa, Canada)	(Goodman et al., 2020)	Not included in the model	Not included in the model	Not included in the model	Informing Consulting Involving Collaborating Empowering
Social Inclusion Indicators for Building Citizen-Centric Smart Cities	(Malek et al., 2021)	Citizens' power Decision-making power Co-production Feedback Information and education Manipulation	Leaders Local champions Co-producers Entrepreneurs Solution proposers Human sensors Volunteer Experts	Not included in the model	Not included in the model

3. Conceptual framework

According to Baxter and Jack (2008) a conceptual framework composes of main gathered constructs and does not necessarily needs to illustrate relationships among the constructs at the first place. A proposed model will be completed as the research is progressing and the relationships will be discovered as the evidences are analyzed (Baxter & Jack, 2008). Proposing a conceptual framework has two advantages. First it enables the researcher to ensure that the analysis is performing within a reasonable scope and second, it provides a structure for the final report (Baxter & Jack, 2008).

Compiling the models and frameworks in the previous section, implies three dimensions as the main constructs of citizens' participation including type or form of participation, level of participation and role of citizens which follows by different actions that citizens perform due to their level, type/form of participation, as well as their role (More information Table 1 in the previous section).

The Scaffold model of citizen participation presented by Cardullo and Kitchin (2018) provides more clear details about the mentioned elements and can be considered as a reference model. Other authors such as ((Levenda et al., 2020) and (Gohari et al., 2020)) has used this model as their main reference model in their case study as well.

In this thesis, I also adopted the scaffold model and I added actors' understanding of the project as the core element, which is the novelty of this thesis. This element entails "various actors' definition of smart city and mobility point concept", "goals and main actors of the project", "definition of citizens' participation and its importance" as well as "motivations and expectations of participation". The motivation behind adding this element is to find out whether and how various actors' interpretations differs due to difference in understanding of the project and how much they have been communicated and aligned. As Table 2 lists, I have introduced three levels of alignment about understanding of the project including unaligned, semi-aligned, fully aligned.

Table 2 Actors' understanding alignment level (Author's own contribution)

Level 1	Unaligned	Actors are not aware of each other's understanding
Level 2	Semi-aligned	Actors are aware there is not any documentation or integration into plans.
Level 3	Fully aligned	Actors' understanding has been communicated, documented, analyzed and integrated into plans.

Lowest level, unaligned, none of the actors are aware of others' understanding of the project. In the second level different understandings have been communicated but have not been documented and integrated into the project planning before starting the project. In the highest level of alignment, actors not only are aware of each other's understanding since this understanding has been communicated, different understandings have also been documented, analyzed and integrated into plans.

Figure 1 shows the conceptual model and I use it as a basis for pattern matching in analysis section. According to the scaffold model , starting from roles, citizen as a "leader" not only make decisions but also have full power over decisions, "decision maker" is actively involved in making decision, "co-creator" collaboratively produces the final product or service, "proposer" give suggestions and ideas but does not involved in the production process, "tester or participant" gives feedback for improvement, "informant" just get informed when it is necessary, "data point or learner" is like a sensor collecting data or other inputs for the service or product to function better (Cardullo & Kitchin, 2018).

In terms of level of participation, leaders, decision makers and co-creator have highest level of participation so called "citizen power". Proposers, testers, and participants are in the second level of participation that is tokenism. This group of citizens have a voice but are not able to change predefined decision. Consumerism is a level in which citizens have the consumer role. Finally, data points or learners belong to non-participation level. In this level citizens are passive users of the products and services providing input for the producer or service provider without being aware of that (Cardullo & Kitchin, 2018).

In each level due to different roles of citizens, they perform various actions. In the first level, their main actions include leadership, ownership, negotiate, and produce. In the second level tokenism, they suggest and give feedback. Citizens in the third level, consumerism, consume as consumers, and in the last level citizens are steered, nudged and controlled (Cardullo & Kitchin, 2018).

When it comes to type of participation, (Cardullo & Kitchin, 2018) introduces eight forms of participations. Leaders, decision makers and co-creator have citizens' control, delegated power, and partnership type of participation. Leaders, decision makers and co-creator have consultation, and information type of participation. Choice, having access to different to choose from, is Proposers, testers' type of participation, and finally data points or learners have manipulation type of participation, which actually means non-participation.
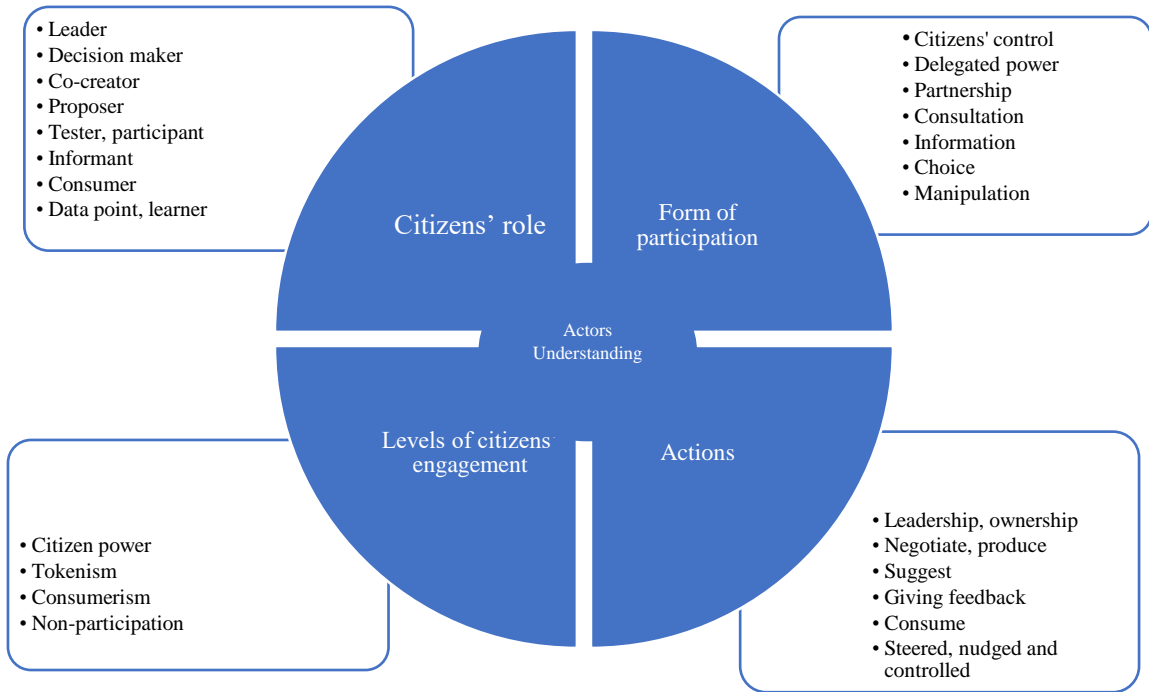
Figure 1 Conceptual model: dimensions describing citizens' participation in a smart city project
(Author's own synthesis)

4. Case review: mobility point project

Stavanger is a city and municipality in southwest Norway with a population of 144 223. It is the fourth largest city and third largest metropolitan area in Norway (Statistics.Norway, 2021).

Stavanger smart city roadmap was adopted by Stavanger City Council on the 12th of December 2016. According to this document, a smart city is not a municipal plan, but a joint effort among different actors by which technology is applied in a city based on the citizens' needs aiming at creating a better place for citizens to live and work (MunicipalityOfStavanger, 2016).

Municipality of Stavanger's role can be an initiator, facilitator or a complete neutral entity supporting the collaboration of different actors to develop a solution. The purpose of Stavanger smart city is to tackle major societal challenges, provide more efficient services to the citizens, facilitate entrepreneurship, and support the development of a more sustainable community (MunicipalityOfStavanger, 2016).

Stavanger smart city development is composed of different projects. In order to consider a project as smart city project, it is required that it a) uses modern technology, b) involves collaboration among different actors such as public sector, private and academia and the projects and c) address one or more of the needs of citizens' while engaging them in the solution development (MunicipalityOfStavanger, 2016).

Projects can fall into any of the five priority categories including 1) health and welfare, 2) education and knowledge, 3) energy, climate, and environment, 4) urban art and 5) governance and democracy (MunicipalityOfStavanger, 2016) .

Good cooperation across sectors, actors and disciplines, technology as a tool in a smart city context for creating economic, social and environmental improvements and citizens' involvement have been mentioned as three main drivers of smart city development in the roadmap. Citizens include persons who reside and work in the region, and their families, who might take different roles such as *users of services* (MunicipalityOfStavanger, 2016). With respect to the time of the citizens' involvement, it can take place before, either during or after the implementation of a solution. The purpose is to increase efficiency and accuracy by testing and quality assurance and checking the impacts on different groups to promoting local democracy. The form of involvement can be direct or indirect such as gathering data about the citizens by observing (MunicipalityOfStavanger, 2016). Figure 2 shows an Illustration of Stavanger smart city.
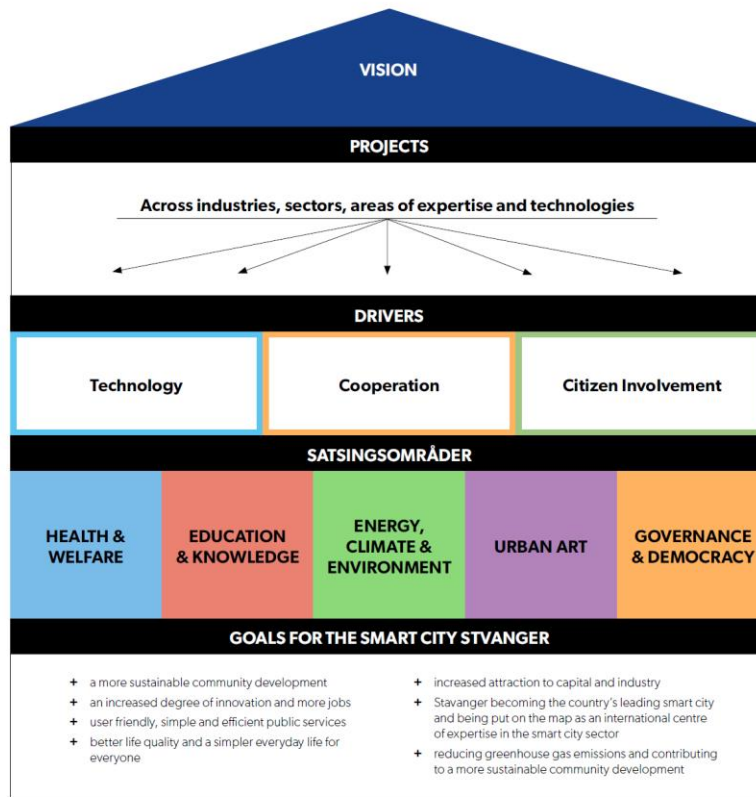
Figure 2 Illustration of Stavanger smart city (MunicipalityOfStavanger, 2016)

According to half-year reports, from 2016 municipality of Stavanger has taken the following measures in order to get more citizens' participation.

The first group of initiatives are training programs for different groups, students and employees. There are three initiatives in this category. "Smart city talents" through which students gather to get more familiar with Stavanger smart city. They learn how to design a service with citizen involvement, develop prototypes and make a presentation. In spring 2019, 22 middle school students and in autumn 2019, 30 middle school students have completed the smart city talents program (MunicipalityofStavanger, 2020a).

"School of co-creation" is a program created in autumn 2020 by university of Stavanger, Nordic Edge AS and smart city in which students learn how to co-create, facilitate, and lead co-creation processes to solve a common problem. In 2020, 25 students have completed the course (MunicipalityofStavanger, 2020a). Before that, the smart city department had developed an internal co-creation hub where different municipality employees could take similar courses.

In "technology SMART" program different methods and tools for service, design is taught to junior high school students.

The second group, hackathons and quick tests are related to making an environment to practice co-creation and collaboration in a more real context than in training programs. In these two programs both residents and businesses from diverse background are gathered to be engaged in formulating the challenges and collaboratively co-creating ideas as solutions (MuniciplityOfStavanger, 2018).

While in hackathons different participants gather in one place, in a specific period of time to work together and shape the very first version of solution, in quick tests, municipality select some companies to quickly test their conceptual solutions in an area by including citizens in testing process. Municipality pays the selected companies for validating and testing their concept before any more investment by the municipality. As one of the selected companies mentioned "quick test is a unique opportunity for smaller companies to test the concept, at the same time as they get to take part in a larger network" (MunicipalityofStavanger, 2020b). The advantage of this six months program for municipality is first learning for the municipality, and the companies that test their solutions and second decreasing the risk of "disinvestments" by municipality (MunicipalityofStavanger, 2020a).

Next programs are associated with democracy and governance priority area and aim at making the process of smart city development more transparent and inclusive. Test of Decidim, and UngLab fall into this category. The goal is to include more citizens in general and young people in particular in decision making process about the priorities in smart city development (MunicipalityofStavanger, 2020a).

In Decidim platform citizens can write and discuss their priorities openly. In contrast, in the youth club program, which includes young people aged 13-15, what is important for young people is discussed, different proposals are suggested and then it is voted to choose a proposal for developing a pilot to be tested. Members of the young club themselves decide how to spend and manage a NOK 300,000 budget for different activities in the youth club.

The last group of citizens' involvement programs include informing the citizens regarding the data which is gathered and used for smart city development. In 2016, municipality of Stavanger launched open data portal and up to today, 361 data sets have been shared on the portal available through this address: www.opencom.no. This data is shared because municipality believes that the

information can be valuable to different businesses. The goal is to create transparency, enable more social and commercial as well as engagement of residents and businesses (MuniciplityOfStavanger, 2018).

In addition to the above-mentioned programs, in spring 2019 smart city department improved the smart city methodology with more focus on higher degree of involvement of employees and residents, early prototyping and testing, as well as stopping unsuccessful projects. If the pilot is tested and succeeds with users' involvement, then the project will be continued and the final solution will be developed, otherwise the municipality will not invest on the project.

Mobility point project was defined as a pilot project, a place where one can find various modes of transport, parking spaces and public transport services suitable for her journey at one point. In a mobility point often different mode of transportation and other services are combined within a small geographical area. Services at the mobility pointinclude city bikes, electric scooters, extra parking space for bikes, bus-stop nearby, two electric sharing cars, parcel machine, environmental station for garbage delivery and take away options. The logic behind developing mobility pointwas that switching transport modes is often time-consuming, and travelers frequently have to move from one place to another in order to transfer from a train to a bus or other mode of transportation. Considering transferring from one mode of transport to another a pain or challenging or tedious part of a journey, and to make it easier for travelers to switch between public transport during their journey, the municipality of Stavanger initiated to make a pilot of a more user-friendly mobility point. The first pilot to develop and test a mobility point was in Hillevåg.

Hillevåg is located southwest of the city center (Figure 3), south of the lake Mosvatnet, and north of the borough of Hinna. The district has significant industrial activity. University of Stavanger, Norwegian Petroleum Directorate, Norwegian Mapping Authority, and Maritime Division are located in this area. The Hillevåg district is 8.08-square-kilometre (2,000-acre) and in 2021 its population reached 19,921 inhabitants (StoreNorskeLeksikon, 2021).
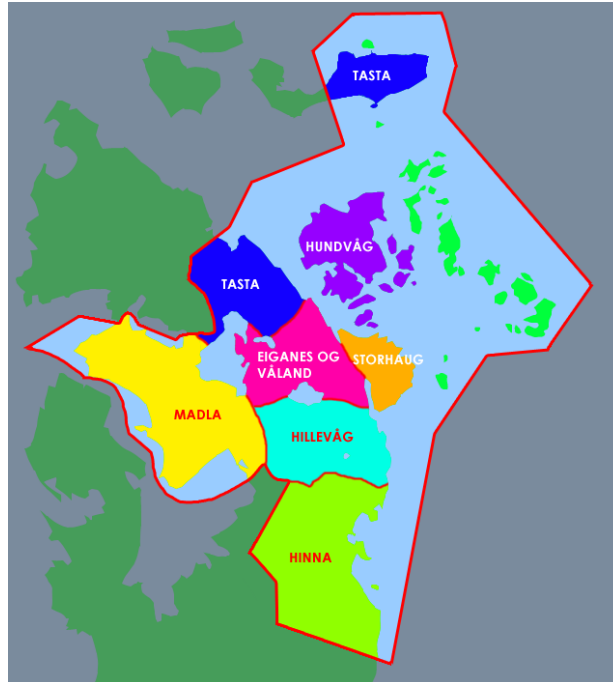
Figure 3 Stavanger city districts (Wikipedia, 2020)

Using design methodology and by conducting extensive research, municipality planned to investigate the needs of those who travel in that area. This involves prototyping various services and functions which are tested in real-life situations over days, weeks and months in order to see whether they meet the needs of citizens or not. These prototypes were then adjusted and tested repeatedly in order to understand how municipality can solve the problem.

Citizens' involvement started in the very beginning of the project in January, February as well as during implementation and testing. Involvement included defining content and functions that might be useful to be provided in the mobility point.

After finishing the pilot, it was expected that a recommendation be documented addressing what permanent features should be provided at mobility points in different locations in order to make travelling easier and simpler.

This project has received 500000 kroner support from the national subsidy scheme 'Klimasats' run by the Norwegian Environment Agency. Participants in the project are the municipality's Smart City department, the environmental department, parks and roads, urban development, Stavanger Parkering, the bicycle initiative in Stavanger, the organization responsible for managing the city square and Kolumbus. There is also a collaboration with other municipalities, the County

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Municipality, and the Norwegian Public Roads Administration to investigate how the mobility point in the region should be developed (MuniciplityOfStavanger, 2018).

Table 3 lists mobility point services and service providers and Figure 4 shows the location of different services. Kolumbus is the mobility provider in Rogaland county, responsible for the bus and boat traffic as well as connecting trains, bikes, walking and car sharing seamlessly with bus and boat so people will get from A to Z without using their own car.

Table 3 mobility point services and service providers

Services	Provider
Bus-stop	Kolumbus
City bikes	
parking space for bikes	
Electric scooters	Private company
Two electric sharing cars	Private company
Parcel machine	Municipality of Stavanger
Environmental station for garbage delivery	Municipality of Stavanger
Take away options	Not available

Figure 4 Mobility point in Hillevåg square (Author's own picture)

5. Research design and methodology

According to (Yin, 2014), case study methodology is relevant when 1) "how" and "why" questions are asked about a situation composed of contemporary set of events 2) to explain, explore or describe a situation, a case, within a real-world context particularly when the borders between events and context is so woven that they cannot be easily distinguished, 3) a researcher has little or no control and cannot manipulate the behavior of those involved in the research. There are three types of case study methods, explorative, explanatory and descriptive. While explanatory case study is used when a researcher is aimed at explaining the assumed causal links in a real context, exploratory case study focuses on exploring the situations in which there is not a clear, single set of results due to the interventions. In contract, in descriptive case study, a case is described as an event happening in a real context (Yin, 2014).

This thesis aims at describing Stavanger city experience in citizen participation for developing a mobility point in Hillevåg square, therefore, the research in descriptive in nature and it is expected to describe a case. The focus of this research is on factors describing this experience by asking two main questions "*how* this participation is happening in practice and *why* it is as it is". Third, I do not have any control over the involved actors' behaviors and I just hear, document and analyze what has happened. The mentioned reasons convinced me that descriptive case study method is a good choice for this research.

Selecting a case is a very important component of case study research. The case is "unit of analysis" and is defined as "a phenomenon occurring in a bounded context" (Baxter & Jack, 2008). In order to find the appropriate case, I checked the information about 23 projects on smart city page of Municipality of Stavanger's official website and used the following criteria to select a case for this research, 1) project is connected to a priority area mentioned in the Stavanger smart city development roadmap, 2) project has been finished, 3) project targets most of the citizens, 4) it has direct effects on citizens' everyday life and 5) it has been published on municipality web page that there has been citizen engagement in the project.

The logic of choosing these criteria was to increase the probability of finding more relevant information for this thesis. For example, if citizens' participation has not been a part of the project development then it is more likely that I will not find any related information, and if the project has not finished yet, it might be difficult to evaluate the participation. If it is connected to a priority area, discovering the goal or motivation of initiation of the project might seem more

understandable. Last not least, if the project effect everyday life of citizens there might be more interest from citizens to participate.

Taking this approach, "mobility point", a project which is connected to Energy, climate, and environment priority area, which has ended in December 2020, and is a part of transportation system which has a direct effect on most of citizens' every day's life of citizens was selected as the case study of this thesis.

Before collecting the case study evidence, it is very important to be prepared. Making a case study protocol and database which includes various sources of information, not only helps to be prepared for collecting data but also increases the reliability of the research (Yin, 2014).

Case study protocol entails questionnaire as the instrument, procedure and general rules. Yin suggests four sections for a case study protocol (Yin, 2014). Table 4 lists these sections in this report.

Table 4 Case study protocol sections

Sections	Description	Sections in this research
Section A	Overview of the case (objectives, main questions, relevant readings)	Appendix 1
Section B	Data collection procedure (procedures for protecting human subjects, and sources of data)	Appendix 2
Section C	Research questions	Appendix 1
Section D	A guide for the case study report	Report format will be as follows: Abstract, Introduction, Literature review, Research design and methodology, case review, Findings, discussions, Conclusion, References and Appendices.

As a case study database, I used EndNote and NVivo. Five sources of data were used in this research including articles used for literature review (S1), Stavanger smart city reports (S2), project documents received from interviewees (S3), recorded audio files (S4), and transcriptions (S5). I used NVivo as a software for organizing the files, coding, and analyzing the data.

Source 1 (S1) and S2 were initially imported in Endnote for referencing in the thesis and afterwards were transferred and coded in NVivo to have all the data stored in one place and make the analysis and retrieving the data more efficient. S3, S4 and S5 were imported, coded, and analyzed in NVivo. Norwegian Centre for Research Data (NSD) approved this research. I interviewed 12 persons as listed in Table 5 (a) four individuals in charge of the project in municipality of Stavanger, (b) two

individuals from private companies, providing car sharing and e-scouters services, (c) two individuals from Kolumbus, in charge of delivering mobility point project and (d) four citizens.

For choosing interviewees in public and private sector, I chose intentionally the individuals who had formal power to influence the process and outcome of the project or holding important information or knowledge of the project. Since due to GDPR restrictions municipality was not allowed to share with me the contact information of citizens who have been involved in the project, therefore, I had a site visit and also checked in my social networks if anyone lives in Hillevåg, uses public transport and is interested in taking part in the research.

I found four interviewees with the mentioned criteria. All the citizens live near the Hillevåg square and use public transport for their transportation. I9, I10 and I11 do not own a car and only use public transport but I12 owns a car. I9 uses bus and train. I10 uses bus, train and e-scooters. I11 walks from home to work, uses sharing cars on weekends to go for a hike and uses public transport whenever needed. I12 uses her own car from home to work and uses electronic bikes in the city center. Table 5 lists the interviews' information and codes.

The interviews were unpaid. Interviews were performed in five weeks form end of April 2021 until the end of May same year. I contacted interviewees by email and sent questions in advance. Three individual questionnaires were prepared, one for municipality, one for private companies and one for citizens. I had to adjust the citizens' questions because I had designed the questions for the citizens who had been a part of the project, but I was interviewing the citizens who actually had not. As an example, I modified this question: "In mobility point project how was your participation? What was your role? to "In mobility point project how do you think your participation should be? What could be your role?" I explained the reason of changing question to the interviewees at the beginning of the interview. Questionnaires are available in appendix 2.

The interviews were semi-structured, although I provided the questions to the interviewees in advance, to discover new ideas as well, the interviews remained open, in a form of conversational and two-way communications, and lasted approximately 45-60 minutes. The interviews were performed online on teams, and they were recorded with the consent of the interviewees. It was mentioned to the interviewees that in the thesis there would be no direct attribution to interviewees, and they can withdraw at any time. After interviews, I transcribed the recorded voice and emailed to corresponding interviewees for final check and validation.

Table 5 list of interviewees

Interviewee	Code	Sector	Background
Interviewee 1	I1	Municipality of Stavanger	Industrial design engineer
Interviewee 2	I2	Municipality of Stavanger	Cultures of Arts
Interviewee 3	I3	Municipality of Stavanger	Biology
Interviewee 4	I4	Municipality of Stavanger	Psychology
Interviewee 5	I5	Kolumbus	Information technology
Interviewee 6	I6	Kolumbus	Marketing
Interviewee 7	I7	Private organization	Primary School
Interviewee 8	I8	Private organization	Vocal music
Interviewee 9	I9	Citizen	Business Management
Interviewee 10	I10	citizen	Petroleum engineering
Interviewee 11	I11	citizen	Biomedical science
Interviewee 12	I12	Citizen	Information technology

To evaluate the validity and reliability of descriptive case study research, Yin suggests testing five items including construct validity, internal validity, external validity, and reliability (Yin, 2014). I used three tactics for construct validity as is suggested in (Yin, 2014) including 1) use multiple sources of evidence, 2) establish chain of evidence, 3) have key informants review draft of case study report. I took the following actions: I used five sources of data including literature review articles (S1), Stavanger smart city reports (S2), project documents received from some interviewees (S3), recorded audio files (S4), and transcriptions (S5). I included three different actors involved in each project, public sector, private and citizens to make sure that I have found the evidence related to different involved parties. I also recorded and transcribed the interviews and sent them to interviewees for validity check.

For internal validity, Yin suggests using pattern matching as a technique in descriptive case study. I used this technique to compare the patterns extracted from interviews with dimensions presented in conceptual framework which are based on literature review. Dimensions were Coded as listed in Table 6.

Table 6 dimensions and their codes

Dimension		Code
Actions	Leadership, ownership	A1
	Negotiate, produce	A2
	Suggest	A3
	Giving feedback	A4
	Consume	A5
	Steered and nudged	A6
Levels of citizens' engagement	Citizen power	L1
	Tokenism	L2
	Consumerism	L3
	Non-participation	L4
Form of participation	Citizens' control	F1
	Delegated power	F2
	Partnership	F3
	Consultation	F4
	Information	F5
	Choice	F6
	Manipulation	F7
Citizens' role	Leader	R1
	Decision maker	R2
	Co-creator	R3
	Proposer	R4
	Tester, participant	R5
	Informant	R6
	Consumer	R7
	Data point, learner	R8

More similarity between patterns shows stronger internal validity of the case study (Yin, 2014). For external validity, Yin suggests use theory from literature review in single case studies.

For that purpose, I performed a systematic literature review by which I analyzed smart city literature through an extensive review of papers found in the scientific databases including Web of Science, Scopus, Google Scholar, Emerald and ScienceDirect. Since in this research I was looking for citizen-centric and sociocratic approaches in developing smart cities and citizens' participation following terms were searched "(smart, future) citizens", "citizen-centric(centricity)", ''participation'', ''involvement'', ''engagement'', ''empowerment'', and ''(e-)inclusion''. These search terms were first used without and in the second round in combination with the following terms ''smart (future, modern, inclusive) city(ies)''. This resulted in 314 papers which their abstracts were related to this research. I imported all the papers into EndNote and, I removed duplicate papers. After reviewing the introduction and conclusion part of the papers, I selected 90 papers for further review. The criteria for selecting the papers was that if

they have discussed any of the following subjects: different approaches in developing smart cities; initiatives for planning, developing, and implementation of smart cities in different cities; criticizing technocratic approach, and emphasizing on the importance of citizen-centric approach; models, frameworks or criteria for assessment of citizen engagement in developing smart cities; as well as empirical studies on developing citizen-centric smart cities. I excluded papers that did not fall in the above-mentioned categories and hence were not of use in exploring the answer to the research questions. Finally, because of the redundancy of the same topics discussed in different papers, I chose 44 papers as the basis of shaping the fundamental understanding of the citizen-centric approaches to smart city development and citizens' participation process. Finally, for increasing the reliability as I explained on page 18, I used case study protocol and made an organized case study database.

6. Findings

In this section I will explain what I found out after analyzing the interviews. I organized my findings into four themes, 1) actors' understanding about the project, 2) citizens' participation and its importance, 3) actors' expectations and citizens' participation in practice, and 4) barriers and facilitation of participation.

6.1. Theme 1: Actors' understanding

Before discovering the citizens' participation process in mobility point project, I asked several questions to find out who the actors of mobility point project have been or should have been and what each actor thinks about the definition and goals of Stavanger smart city in general as well as in terms of transportation and what is each actors' expectations of participation in the project. I also tried to find out how different each actors' motivation or interests are in taking part in the project.

6.2. Main actors of mobility point project

When I asked interviewees from municipality about actors in the project, one of them mentioned, "Environmental and climate office as well as smart city department in municipality and Kolumbus were the main actors" [I1]. Kolumbus understanding of the main actor was the same: "Kolumbus and municipality were main actors. The other two companies that are non-profit organization, they are different providers of the different services, delivered in that mobility point. So, they are not part of the project itself" [I5]. One of the private companies' answer was, "We had a passive role, we were approached by smart city Stavanger, and it was asking if we could just drop off some e-scooters in mobility point" [I7]. None of the interviewees but citizens mentioned citizens as one of the main actors of the project. As one of the citizens stated: "Everyone in this society is an actor in developing a smart city, citizens, the municipality who are leading the project, the companies which provide funding to these projects, everyone. It's everyone's responsibility to play a part" [I10].

To wrap up, while citizens think that they are one of the main actors in smart city development projects including mobility point, neither municipality nor Kolumbus mentioned them. Environmental and climate office as well as smart city department in municipality and Kolumbus have been the main actors in this project.

6.3. Definition of Stavanger smart city in terms of transportation

In terms of definition of smart city, one of the private companies involved in mobility point project thinks, "Smart city, it is going to bring us back to the early 1900s and how we actually did things there. When cities were more, "pedestrian-centric" in terms of allocating more space for street activities than relying on an internal combustion engine. Smart cities and cities of the future will try to reduce car use more and more and make it harder to actually use vehicles inside the city center and open up more of the area for the general population to both walk, use E-scooters, and very efficient ways of transportation with short distances in order to live their daily lives. Like the idea of "15 minutes cities" and everything being available. It is going to take a long time before we get there, but it is a better way of doing transportation than allocating 90% of all of our spaces to cars" [I7].

All three citizens' definition of a smart city showed that they expect smart city and smart transportation make their everyday life easier. "Smart city means "Easy" for me. A smart city should be easy for people to travel and find out how to get from A to B. Easily find out the resources, like shops and public transport. It should be easy should not be stressful to find out how to get around or who to contact" [I9]. They believe what is provided for them is opposite to what they expect. As one of the interviewees mentioned: "The city has not designed for us" [I9]. "In Hillevåg, it's even hard to cross the road because the road is divided into two car lanes, and then you have two bus lane in the middle. You can only cross the road under the street and those underpasses are very far from each other" [I10]. As another interviewee mentioned, "Under paths are dark and scary at night. I preferred to cross the street than walking into this underpass" [I12].

When I asked municipality about their definition of smart city, I found out that they are also looking into solutions that is easy without a lot of effort and is according to citizens' needs. As one of the interviews mentioned, "A smart city in general is a place where everything just works. It is supposed to be like switching the light on and off, and you should do a command, stuff should just work. You need to get from one place to another, it is seamless. You need quiet time; you get quiet time. You want to stay busy; you get stay busy. It is a city that caters to your demands" [I2].

They also believe that they need to pay attention to citizens needs not what is feasible by technology. "A smart city in my opinion is anything that improve the everyday life of the citizens. It does not need necessarily to focus on digital technology but on citizens' needs instead" [I4].

Another interviewee in municipality had a different perspective. "Stavanger Smart City is a city where the public and private sectors and the educational sector cooperates in finding the best solutions and the best ways forward for the city and you cannot make that kind of judgment without citizens. It is our point of view that smart city is kind of a method, a working method, rather than a focus on technology. Because the method that we are exemplifying and striving for, is to involve more citizens and to create a city for citizens" [I12].

To wrap up, citizens define a smart city as a city that makes their everyday life easier. Municipality have the same idea and believes a smart city should improve everyday life of the citizens and finding a solution for that purpose needs different players such as the public and private sectors and the educational sector work collaboratively and have citizens' judgment on the way. Lastly, private sector thinks a smart city needs to be pedestrian-centric using their services more.

6.4. Goals of Stavanger smart city in terms of transportation

About smart city goals in terms of transportation, one of the citizens believes that "The goal of a smart city should be to save the citizens time, to make citizens happier, and to make their life easier" [I11]. The other citizen thinks the goal should be "Accessibility for everyone, which means easy access to transportation, and especially in emergency cases, which it will make a real difference" [I10].

In contrast, municipality believes that "The goal of smart city and mobility point project to be specific is to reduce climate emissions. I think 50% or 60% of climate emissions come from the streets, driving, we have a big potential to save climate", as well as "seamless transportation to make every day traveling easier without using your own car and increasing the probability of leaving your car at home". Kolumbus thinks that the goal should be "Using technology to deliver better services to people" [I6].

As one of the other interviewees from municipality adds, "We, to some extent, want them to change behavior to reach some societal goals, but we do not want to force them. To some extent, positive nudge, and negative nudge, make it increasingly easier to live without a car, and make it increasingly more difficult to actually own a car for example make fewer parking spots and more expensive parking spots" [I4]. This quote from a citizen shows that municipality is reaching this goal to some extent. "I did notice about sharing cars when a friend of mine told me that. I got my license, I was just like ready to buy a car, and a friend of mine told me that I could use car sharing.

I just started to change my mind; I thought there is no reason to buy a car if these services are available and of course cheaper" [I11].

To wrap up, while citizens believe that main goal should be happiness, ease, and more equal accessibility, municipality set the goal as to reduce climate emissions, and increasing the probability of leaving cars at home by providing easy every day traveling services.

6.5. Interest and motivation of participation

When it comes to citizens' interest, cost is one of the motivations in participating in smart city project as stated by one of the citizens above. Municipality motivation is "to make the city more transparent and make the city in a way that people enjoy" [I3]. Kolumbus has been a part of the project because "Some of the services, which are wanted and needed within a mobility point, are delivered by Kolumbus. So, it's kind of natural that we are a part of that collaboration or that project as well" [I5].

When it comes to private organizations' motivation, as one of the interviewees mentioned, "The motivation was expansion of our business with low risk" [I8]. There has been an agreement between private companies and municipality as one of the interviewees mentioned that "if they lost their profit due to using them in that area as a pilot then municipality will compensate a part of it" [I8].

To wrap up, citizens expect lowering the cost, municipality aims at making city transparent, a place to enjoy as well as fewer emissions to meet city goals. Kolumbus intends to provider better services, and private sector is looking for making profit and to expand their businesses with low risk.

6.6. Actors' expectations of engagement in the project

Different actors in this project have their own expectation from the project. Even in one group of actors such as municipality or citizens, I found different expectations. For example, one of the interviewees from municipality stated that "we want people to use the mobility points to, like, you know, not just using it but giving feedback as well" [I3]. The other interviewee from the same group says, "I'm not expecting citizens to use the mobility point, but I'm expecting them honesty, to let us know why they are using or not using it, some feedbacks" [I1]. While municipality is looking for feedback, one of the citizens, I9, believes that whenever she gives feedback, she does not get any follow up on her feedback. "I would like to feel that I'm heard and to receive the results

of my feedbacks, even if the answer is negative. I understand that they might have 500 people to, follow up with, you know, 500 different opinions. I just want them to take some actions on our feedbacks" [I9].

I3 from municipality looks at expectations in a different way. "I think it depends a lot on what kind of problem you're trying to solve, because some like mobility project, we expect to have some ideas but of course we want them to reuse those services, and we want them to use square" [I3].

With respect to citizens providing ideas to municipality, three of the citizens had some ideas. I9 says "About the location of e-scooters and e-bikes "I would put them right next to or behind the bus stops. Because it is where you usually want to get further from. So, we'll jump up on one of them. Because it would be probably quicker for me to use the scooter than walking, but where they have located them at the moment, they're not visible either from the bus stop or the train station". I12 says, "I would like them to have their Apps improved. 3 apps to only use the Bus, they all could be in one public transportation App!" [I12].

While one of the municipality employees, I3, likes citizens to give some ideas, one of the citizens, I11, expects municipality "to listen to the people's opinion" and the other citizen, I10, expects municipality "to reach out to us. They can email us; they can message us. We use these services in our everyday lives. It is actually part of our everyday life". I12 who is not sure if she has enough knowledge to give ideas to municipality expect municipality "to clarify the case for me and explain it in simple words, because I'm not an expert. I'm just a normal citizen" [I12].

When I asked Kolumbus, about their expectations from citizens, "Use more services, use less car [I6]" similar to I2 in municipality, "We want people to leave their second car at home and use public transport". The other interviewee from Kolumbus said, "I expect them to give feedback if something isn't working or something's not optimal via social media contacts, our web pages, email, customer service" [I5].

While municipality provided some services in the square so people use this square more and helping municipality with sustainability goals, as I3 says "This project was more about how mobility point can be developed so that citizens will actually use the square and mobility point, so that we can bring about other goals such as sustainability and climate" [I3], citizens see the square as a park and expect totally different services in square to enjoy using this space.

One of the citizens likes municipality "to add some more flowers and make the square greener. I would like to have something similar to farmers' market in Stavanger city center here. Food trucks,

on weekend especially. People can go and have a bit of this and bit of that. Outdoor cafe. It is a park, right? So there needs to be such things there" [I9].

The other citizen says, "For me in summer, if there is an ice cream or coffee shop there, and it's especially open at weekend, Sunday and Saturday, then it's very good for me. I enjoy meeting my friends there and sit there and have our coffee. Also, food truck. There is one in a parking lot outside Kilden but there is not any place to sit. I think that would be nice if they put it in the square and let people use this space and add more sitting places That's really cool" [I10]. She also thinks "it is good to install an information monitors about bus stops, their time of arrival" [I10].

When it comes to private sector expectations, they liked to be more involved in the project, "We could contribute in different ways: we could help in choosing the location and route forming to capture as much attention as possible. The place of scooters changes dynamically according to their usage, so a static model of putting a specific number in mobility point does not make sense. We felt like our scooters were standing there not being used and we were just losing money" [I7]. They also expected the municipality to inform the citizens that this service is available for them, "Could there have been some marketing activities maybe strengthening the use of e-scooters there possibly?" [I7].

To wrap up, municipality and Kolumbus as two service providers expect citizens to give idea, use mobility point services and the square, and give honest feedbacks. Citizens expect the municipality to reach them out, to be heard, to be asked for ideas, to be offered the services they like not services municipality thinks they need to have, clarification, send the results of their feedbacks, and improve the services. Private companies expect giving ideas about how to develop their services in mobility point as well as marketing activities by municipality to inform citizens about their services.

6.7. Theme 2: Citizens' engagement and its importance

To start citizens' participation topic, I asked citizens if and why they are interested in taking part in mobility point project. I continued with different actors' definition of citizens' engagement and its importance.

When I asked if citizens are interested in engagement, one of the citizens who has been living in Hillevåg square over 10 years, she was very positive about participation and giving ideas for improvement of the neighborhood. "I would like to be asked before they actually spend the tax money that I pay on these things. I think I would be able to come up with some good suggestions

because I do use most of the local offers. I do not really need to go much outside this area for my daily needs. I have lived here for so long. I figure out where to go and what to do. I think I know where it would be better to locate the post boxes or the bikes. I just want to make this area a really nice place to live" [I9].

Two other citizens answered that they are interested in participating in the activities, which are related to services that they use so they have information and ideas for improvements. "If there would be something that I have an idea about or there's something that I'm a final user, yes, I will help" [I12]. "Yeah, I like to participate if it can be helpful. I as a foreigner, I do not know the city very well. My participation might not be very helpful but for the routes that I take public transport, I can have some ideas" [I11].

To wrap up, how long citizens have been lived in the area, and used different services, how much information they have about the neighborhood, their knowledge level about a service as well as being a final user of a service or not are important dimensions of citizens being interested in participating or not.

6.8. Definition of citizens' engagement

I asked all the interviewees how they define citizens' participation and what it means for them. For Kolumbus, "Citizens' participation means giving honest feedback and be responsible. So, the company can improve the services for the users" [I6]. "The most important contribution that citizens could have is about the content of the services in mobility points, how some of the services work" [I6].

For one of the citizens, "Citizens' participation is a responsibility of citizens to speak. Because municipality is doing this for us and with our money. So, we need to be in the loop of the development process and have opinions and impacts" [I11]. For the other two citizens, "Citizens' participation means being informed, being involved and also have the chance to be heard" [I10]. "Citizens' participation for me is like communication both ways. So, when they ask something, and we reply those, there's some feedback, two-way communication is what participation mean for me not like a dead end, you say something, and nothing is back" [I9]. One of the citizens thinks that she can give some feedbacks about the services she uses and some suggestion for improvements. "For me as a public transportation user, I think I can participate in telling them, how convenient it is for me to use this system, like going well or not and some suggestions for improvements" [I12].

One of the interviewees from municipality thinks that citizens should be involved in both discovering problems and shaping the solution for that problem, but she mentions that the final goals of these activities is to have citizens as the final users or consumers of the solutions. "I view citizens' participation, kind of natural part of problem solving and problem finding, obviously, because our end goal is that the services would be used" [I3].

For private companies "Citizens' participation means citizens' engagement in using the service [I7]". He thinks if citizens use the service then they have enough data to analyze and based on that offer better services for the citizens. In contrast, the other interviewee from private company thinks the same as Kolumbus, "Citizens' participation means citizens giving honest feedback if there is anything wrong [I8]".

6.9. Importance of citizens' engagement

In terms of importance of citizens' engagement, starting from citizens, one of the citizens believes that his participation and even his friends' participation, as a user of the services, matters a lot. "Participation is important because it is part of my responsibility as a citizen, I mean, it is my tax money. In addition to that, I would like to see city improving" [I11]. He emphasizes that his friend's participation is also important for him and might affect his decisions. "I changed my mind about buying a car due to my friends' feedback about using car sharing services. If there was any marketing or advertisement, for example If I just saw an ad on Facebook or something like that, I think it would not be as powerful as my friend telling me about it because he used it himself, so he suggested that for me" [I11]

One of the employees from municipality thinks similarly, "Citizens' participation is important because I think they own things; it is their neighborhood. I mean the sense of "I own my neighborhood" is very important. It should not be like I do not mind, and I live my own life" [I1]. One of the citizens thinks, "It is important to hear desire of people, us, especially those who will be benefiting from accessing those services. They are the final users, and they know better what they need and how it needs to be provided for them" [I9]. Although she calls himself and other citizens "users", she thinks that citizens need to be involved and it matters who be involved and they should have a voice in what and how a service should be provided for them.

Kolumbus has the same idea "Participation is important because you actually cater for the needs of recipients [I6]".one of the citizens thinks it is also important because she can help to improve the quality of the neighborhood and therefore there is more chance that her friends got interested

in moving to that area as well. "I have lived here for a long time. So, I want to improve the quality of my life and others in area, so my friends be more interested in moving to this area [I9]". "The second reason is that I want to help. I do not know how many people in the council work or live locally here, and they have so many other things to think about. So, I can help them since I am a local. They might also design different local areas similarly, like they apply the same strategy for each area and then it might not work for all areas. So, I can help them to customize it for our neighborhood [I9]".

One of the employees in municipality thinks the same, "Citizens' participation is important because we are not familiar with the area so much. So, I think that from my personal perspective, it also kind of made sense to both hang out there a bit before suggesting things and also hear what the people were thinking and saying and feeling about this location [I1]". Another employee has similar idea, "When you live in an area you have day to day knowledge. You are the expert in your own life. I think that is the perspective that you bring. You are the only one, that could say, how you like to live your life. So, some citizens also have specialized knowledge because they work with something specific or they have like community activity that can be also used [I3]".

One of the other citizens thinks that she might help to tackle similar problems as hers that other might have. "Participation is important because maybe other people have the same problem as I do. So, maybe I can make the life easier for some people [I12]".

To wrap up, citizens' participation's meaning and expected level of participation is different for each of the citizens. It means responsibility for I11, it means using the service and giving feedback on improvements for I12 and for I9 it means having two-way communication. Being informed, being heard, being involved, having dialog, giving feedback and receiving feedback on feedbacks are the preferred level of participation for citizens. For Kolumbus participation means giving honest feedback so, they can improve their services. For municipality participation means to be involved in problem solving and problem finding, to have a voice and be heard, so the municipality can customize the services according to citizens' needs and citizens use the services eventually. For private sector, citizens' participation is using services and honest feedback.

In terms of citizens' participation importance, citizens think, first, it is part of their responsibility, they care about city improvement, they know the area better, they are the end users, so they know what they need and how it is better to provide it for them. They also believe there might be people with the same problem that if one raises the problem, it helps to solve the problems of other citizens

as well. Municipality believes that citizens own the city; they know better the neighborhood and what they need. Kolumbus has a similar idea. They think citizens know better what they need.

## 6.10.	Theme 3: Citizens' engagement in practice

Mobility point project started Feb 2020 and was planned to finish in December same year. As

Figure *5* shows, project included 5 phases, starting from identifying the needs, followed by suggesting potential solutions, implementation, and prototyping for testing and recommendations for improvement. Citizens' involvement was a part of prototyping in which a prototype of the mobility point was planned to be developed, tested and adjusted in several iterations before suggesting a permanent solution.

When I asked about the reason of involving the citizens in the 4th phase of in project not earlier, one of the municipality employees answered: "We could have involved citizens earlier on when deciding the location for the mobility point. But there's a timeframe when these funds can be used. It's also just a test and it could be moved or removed all together as a concept" [I2].

In contrast, the other interviewee, believes that "You cannot go out to people and ask what your need is. Making a prototype is a good way of citizens' participation. Sometimes you really have to make some prototypes including services, then start evaluating by observing and asking people to see if each service is adding value or not and refine based on that reflections. It is cheap, and much easier, requires a little bit of man hours and you get a really fast validation whether you have a good business idea or not. That is why are we doing like a small prototype project, because we have an assumption that it might change. But the prototype needs to be adjusted and tested in many iterations" [I4].
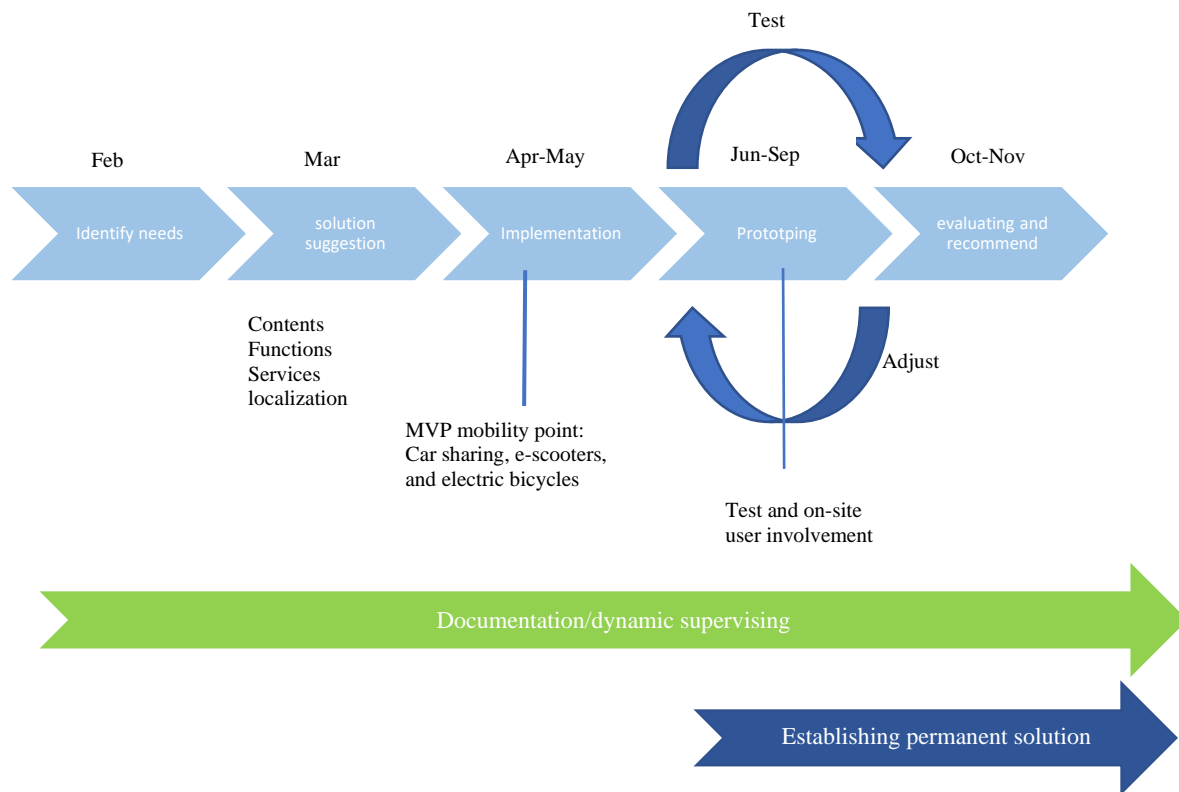
Figure 5 Mobility point project plan [I3[1]]

When I asked about the reasons of choosing Hillevåg square as the location for mobility point development and if/how citizens were involved in the process of choosing location, I2 answered "To test the mobility point, it was necessary for us to find a location that made sense from a mobility perspective and then we asked citizens to become a part of the project" [I2].

I3 stated, "There may be some decisions that citizens are not the best ones to make because there could be other perspectives that needs to be considered as well. For example, about the location of different services, if we already have electricity power for sharing cars installed in a place, then we need to locate them there instead of adding a new one" [I3].

I6 in Kolumbus thinks, "Choosing the location is not maybe the best area to let the citizens decide because it's not so easy to make a property to be used for a purpose. Municipality make such decisions. This issue is not something you're getting asked where and I guess that's wrong" [I6].

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1 I received this figure from I3 by email.

I4 believes that "For participation in decision making about the projects, they need to be like a threshold of knowledge and then you will just get people like me that are too engaged in this and have really strong opinions about it, and you will not actually solve the problem for most everyday people. You solve the problem for the nerds" [I4].

I5, Interviewee in Kolumbus, agrees with I6 he thinks that citizens might not have any input on the locations and type of transportation services. "Maybe I don't see the kind of full potential here because locations are kind of given. The municipality are already planning transformation and development in different areas. The services are already also given, because you don't have hundreds of different services, you have 5 transportation services, bus, train, e-bike, e-scooter and sharing cars which are provided by private companies. You don't have too much other kind of options" [I5].

When I asked Citizens how they think about their role and their preferred form of participation I11 said, "So far, I would, consider myself just a consumer of the smart city products. But I like to be informed and to be in the loop of what's going on with the municipality plans, or what projects they're having and as long as they are taking my opinion, then that's good enough" [I11]. The other citizen, I12 said, "I would like to be informed and give them suggestions and feedbacks" [I12]. None of these two citizens like to be a part of decision making. Only one of the citizens suggested to "select a group of citizens based on different criteria and involve them in municipality meetings in which decisions about smart city projects which effect citizens everyday life are made in order to have citizens' perspectives as well" [I9].

When I asked interviewees from municipality who has been responsible to involve citizens, "Two employees in smart city development were responsible for citizens' participation process" [I1]. Kolumbus, and private sector answered that they have not been asked by municipality to include citizens in their process of providing service. I8 says, "We have not been asked to include citizens in our process. However, we have a feedback procedure ourselves that we ask users if they are satisfied with the service in the form of review and giving stars. Questions such as if the car was clean, or not damaged. Every three years we also send a questionnaire to car owners" [I8].

In contrast, the other interviewee from private sector believes that there is no need for direct involvement of citizens and gathering data about citizens' movement is enough. "I understand citizens' engagement and bringing them along, I have to be honest and say that we're not going to do four months of work and research involving citizens to find out where to locate these scooters,

because based on data gathered on their movement patterns, and how they actually travel on a daily basis, you can get so much insight in a shorter amount of time and it is very cheaper" [I7]. Regarding the process of involvement, one of the interviewees from municipality says, "We only got to have a direct interaction with citizens at one point during the project. We went through a third party; we gave them a set of requirements for people to find such as living close by" [I2]. As his colleagues adds "Requirements such as residents living in the area within the radius of that square, young and old, with and without immigrant background, different genders and how people transport themselves. They recruited six people" [I3]. "We had an online interview with them using our own platform; it's a version of zoom. The interviews lasted about an hour. We asked them general questions, and then we got closer into the subject at hand. They were positive for something to happen there. Then afterwards, we talked to citizens about their ideas if it is a good idea to have mobility point here? We told them we would be testing the concept at that point at square. So, we asked them more about the location of the different services, if it makes sense to have it there or there" [I2]. "Interviews happened over a period of one or two weeks" [I3]. Interview questions included some information about the interviewee, where he lives, what are his hobbies, travel habits, use of public transport on workdays and weekends, as well as his idea about Hillevåg square, how he uses the square, what he likes to be in the square, his idea about mobility point concept, and suggestions for improvement.

"We also had a QR code, posted on the site [Hillevåg square] that led to a questionnaire" [I2]. Questionnaire (Appendix 3) includes some information about the interviewee, similar to the questions used in interview session and at the end some questions like if they are using the services being added in the square and if anything is missing and municipality needs to consider.

"After the prototype finished, we went to the square, we had some sharing cars with us and one of those electric bicycles, and we took photos and put it on our website to give some information. We had some politicians with us as well. We had it on newspaper as well" [I1]. "During the official opening ceremony of the mobility point, we interviewed citizens who walked through the square; we also had a more in-depth questionnaire for that event. Access to that questionnaire was through a QR code. I did not make it as easily accessible as I should have. I had one or two white posters with a QR code printed on" [I2]. They also made the open questionnaire available in their website and Facebook page afterwards, asking citizens about their experience of using mobility point and any improvement suggestions (Appendix 3).

When I asked if there were any thoughts about incentivizing citizens to participate, I got this response from municipality: "should we? There is not any need to have any rewarding system or mechanism to motivated citizens to participate. Because it is a responsibility of citizens that they need to be involved. Because in the future, what happens, for example, a mobility point, if it is getting more crowded or less crowded, and whatever effects it brings by having that installed there. So, it affects, every citizen is responsible. We gave a gift card to the ones who we recruited for the interviews and I think it was one of them who said the only reason why I said yes to this interview was because of the gift card" [I2]. One of the employees in Kolumbus has similar idea: "I don't think usually needs a lot of incentives to get good feedback. But if people have the effect of their feedback then they are satisfied with what they needed" [I6]. When I asked citizens the same questions, "I think it is a good idea to ask for our ideas in a form of competition with a reward at the end. It motivates people to participate" [I11].

With respect to citizens' feedback, I2 says, "Largely citizens didn't have anything to say about the locations of services. There are regulations in place at the square that we also had to take them into account, for instance, the two last months of the year, there is Christmas tree sales, some places needed to be free for accessibility of an ambulance or fire trucks, or entrances. So, a lot of the initial exploration of the space told us a lot about where we could not go. We came up with a draft of where services could be and we showed it to the citizens, and they were like, Yeah, no, that makes sense, perhaps that thing could be there" [I2].

When I asked what happened to those feedbacks, I2 answered, "we actually addressed these feedbacks in our project meetings, and we tried to figure out if we could put them there or closer to those locations that citizens suggested but still there it is. It's like, you couldn't use those feedbacks in your plans to change what you have planned initially" [I2]. He continued, "The feedback from the citizens, you cannot see them now. However, we did address them seriously in the meetings. We did not tell them that we discussed them. But we did. It was a tough thing to maneuver. Again, I hate the excuse. But it became kind of a mess for the involvement process" [I2].

When I asked interviewees from municipality, how they evaluate citizens' participation in this project, I3 responded "I think we have a good department of communication, I think they are quite good". In contrast, I4 thinks, "It could have been improved. The participation was quite impactful but of course, some of the elements was not possible to incorporate like if there were wishes to

have the bikes closer to the neighborhoods or in other locations" [I4]. In contrast, one of the citizens believes "Maybe someone was engaged, but at least not enough and I think we should have maybe gotten a letter about this" [I9]. Private and Kolumbus had not any input on this question as I5 stated, "It was municipality responsibility to engage citizens we were not a part of that process" [I5].

To wrap up, in terms of the time of participation, municipality and Kolumbus both think that the best way is to make a prototype and make the services available and afterwards citizens have it tested and give feedback for improvements. They also think making decision about locations is not an area that citizens can contribute, and if they give some ideas it might not be usable. In contrast, citizens would like to be informed, give ideas and feedbacks. Private companies think that gathered data from movement patterns is best way for citizens' participation. As one of the interviewees says, "Our decisions are mostly data driven. I believe that data is our friend, I think generally, people do not exactly know themselves off the top of your head, by using data we help them to discover it. From this type of data, we can draw some conclusions on, where does it make sense to introduce micromobility" [I7].

6.11.   Theme 4: Barriers and facilitation of participation

In order to facilitate the participation, first I asked interviewees about the barriers that prevented or might prevent them from a meaningful participation. For one of the citizens "Language is a barrier, if the communication is going to be in Norwegian. It is my fault, I know. Maybe if they could ask me first what my preferred language of communication is then I could participate more efficiently" [I11]. The other citizen thinks, "Availability is a barrier for me. I go to school, to work. It is not just a simple chat, you know, our input has to be processed and it take time for municipality to learn sometimes" [I10]. Several interviewees from municipality and citizens [I10, I1, I2, I3] mentioned pandemic as a barrier. "It was the first experience for municipality during the COVID-19 situation. We had a project time limit and COVID situation lasted longer than we expected and then of course you don't want to wait projects" [I3]. One of the citizens has the experience of sending letters to municipality and filling posted questionnaires but getting no response. She says, "No feedback is a barrier for me to participate. I have never heard anything back from municipality, and I think even if they respond to me, there will be probably some arguments back. If people say something, it is because they care about the city. I do not even know if they have ever read our concerns. It kind of goes into a black box somewhere, and I don't know

what's happening with them" [I9]. Lack of knowledge is another barrier. "If there would be something that I don't have any idea about, for example, they're constructing a bridge, I don't have any knowledge so I cannot participate" [I12].

When I asked Kolumbus about barriers of citizens' participation, I6 said "Not enough data about whole journey. If we could know where people are actually going from point A, we could kind of optimize transfer between those actual destinations" [I6]. He continues that the other barrier is that "Maybe the big picture is not that much clear for citizens when they request for a new stuff. People are not aware of the process and costs that it takes to give them what they want" [I6].

When I asked municipality employees who have been directly involved in citizens' participation about barriers, I2 raised several fundamental questions and concerns, "One question is the matter of resources that is devoted to citizens' participation. I want to know what the municipality gets in return. Does the payback increase value? Is it actually valuable insight to take into consideration? I would say, yes, because citizen has their concerns. But is every point of view equal?" [I2]

Uncertainty about municipality capacity in fulfilling citizens' expectations is also another problem as I1 says, "I think the more citizens involvement the better. But then when you ask people something you need to give them something back." she adds "politicians make final decisions; we can tell them that people want to have this and that. I think we have good politicians, and they are aware of this and they have some good arguments." I6 addresses a related point to I1's concerns, "It is very important that if you want the citizens' ideas, make it in a way that you know you can implement those ideas. It is better to ask for involvement in areas where you're ready for improvement, don't make the citizens confused or asking for feedbacks that you know that more likely for example politicians don't let you to have those comments implemented so it is better not to ask such questions" [I6].

I3 mentions level of involvement as a key point. "It is very important to have some sort of balance. You cannot ask too much because then they get tired. Oh, no, someone was asking us again. Because then it is always like, yeah, they ask us, but we never get the things we asked for. So, I think you should not do it too often. There needs to be a balance of how much they are involved" [I3]. I2 complete this comment "We're also mandated by law, to have citizen involvement, but it could be more explicit about how much involvement there could be and what kind of involvement there should be?" [I2]

I4 thinks that not enough competencies in service development in municipality is another barrier, "The prototype needs to be tested and adjusted in many iterations and it needs competencies which municipality should take into consideration" [I1]. Reaching out citizens is another barrier. I3 says, "I think how to reach everybody out there is a barrier for us. You're just reaching the people passing by and not the people not passing by" [I3]. I1 adds to this comments that "So you improved things for like 5% of the citizens while 95% of citizens might have different needs, which has to be addressed in a completely other way. That is the good thing about doing pilots and early testing. Because people use the prototype, you learn, and you can bring your service into a new direction and then you can pivot and start developing a new prototype" [I1].

I2 thinks, "Not enough participation is a barrier, we just have a few people reading our Facebook page and newspaper and answering questions in a QR code" [I2]. He adds something about the potential reason, "There is something about the time we live in and actually getting the information across as well. Perhaps there is also too much information that even though they have read it, they don't remember it [I2]."

I2 addresses barriers related to technology limitations in covering complexity and diversity, "When it comes to aspects of people's lives, it is impossible to create something that fits everyone, there is no such thing as one size fits all and when it comes to technology, it either becomes too complicated or it just becomes a whole mess" [I2].

I4 mentioned that understanding the mobility point concept by citizens was an issue. "The mobility point concept was a bit hard to understand. The concept had to be defined for funding application before involving the citizens. Some people thought it is something related to mobile phones" [I4]. Interviewees from municipality addressed some barriers that are related to citizens, I1 believes that "It is really hard for people to kind of talk about something that they do not have. Therefore, it is hard to respond to questions like would not it be nice to have a mobility point here? How would your everyday life be improved if we have mobility points here? It is completely impossible for people" [I1]. I1 has the same idea. She confirms and says, "What is challenging is that, for people it is actually hard to express what they need" [I3].

I2 thinks there are some barriers which are related to personality of citizens. "If they use the service everyday especially when it is close to your house, everyone should participate. Because everyone should be thoroughly informed about what is going on around him or her. But that's also wishful

thinking, because some people just do not care" [I2]. I1 has a similar idea "People are not really that much conscious about these things as I am. They just follow" [I4].

I2 points that participation format needs to be according to citizens' personality. "Participation also depends on the personality of the interviewees. There is a strong tendency for when we want citizen involvement, we get the usual suspects. If you say something, you can either be praised for it or slaughtered for it. There are a lot of people who struggle mentally after they post a simple comment on Facebook. We tend to say that it is easier to make a comment on the web than in person in front of 200 people. Individual involvement is better but needs resources and is time-consuming. Citizens are more relaxed when we have smaller groups for involvement or one to one so they are guaranteed that what they say will not get back to them" [I2]. He thinks having knowledge about the subject is something that affects citizens' tendency to participate, "If you want to participate in something, you'd rather participate in something that you know, rather than something you don't know" [I2]. He mentions another personal factor related to citizens, "Risk perception is also another factor, like, what kind of a risk am I running by participating in that? Do I have control over that situation? Is it something that will affect me directly or not? Will it do something about my everyday life?" [I2]

Private companies have not been a part of citizens' participation; therefore, they did not have any input on this question.

After discussing the barriers, I asked both municipality and citizens how they could overcome barriers and facilitate their participation. I2 thinks, "Citizens' involvement is depending on municipality employees' skills, for actually facilitating structuring, analyzing, and storing the feedbacks. I would like municipality to have some sort of collecting box. However, it is hard to see how it would actually work within the paradigm that we are working now. I think that would need a paradigm shift" [I2].

When I asked if training citizens is a good way of facilitating their participation, this was one of the interviewees' response, "to train citizens to make them ready for smart cities, No, no, no, I think it is much more cost efficient to train people working in the municipality on how to understand their own citizens" [I1].

I9 thinks municipality can facilitate his participation by giving information about their services, "I have seen the scooters just on the street around here laying around. I would like to try them, but I do not want to be standing on the street, looking stupid because I do not know how to use them. I

would like to have maybe a note in my post box saying that we have developed mobility point. Now you can use scooters and bicycles, and here are the instructions of how to use them" [I9].

I11 have the same idea, "Sometimes municipality provide some services, but I just do not get what the purpose is. There could be a little description about how we should use it" [I11].

I9 adds "I'd like them come out of their offices and talk with local people, asked for our opinion, and especially people who have lived in the area for a long time. I expect our suggestions be followed up and even if the answer is no, but just to know that they've looked into it" [I9]. She continues, "I think they should be more active on the social media, face book, Instagram for example, publish instant posts with hashtag to different local communities" [I9]. When I asked citizens how they can improve their participation, these are two responses, "I can continuously use their service; it is what we can provide" [I12]. "I will give feedbacks and ideas for improvement" [I9].

To wrap up, barriers for citizens include language, availability, pandemic, receiving no feedback after communication, and lack of knowledge. While for municipality, they have some fundamental concerns about payback of participation, level of involvement, if they can fulfil citizens' needs or not. They mentioned lack of clarity on level of involvement provided by law, final decisions by politicians, not enough skills in municipality, reaching out citizens, technology limitations and not enough participation of citizens as the other factors that hinder meaningful citizens' participation. They also addressed several barriers that are associated to citizens, including understanding the mobility point concept, difficulty in expressing needs and giving feedback before using the services. There are some dimensions related to the personality of citizens that effects their participation, such as suspicion about giving feedbacks; feel more relaxed in small groups or one to one communication and in situations that they have knowledge, and lower risk perceptions.

In terms of facilitating citizens' participation, interviewees from municipality think employees need related skills. Citizens from the other hand think municipality needs to contact people in person or by social media, keep them informed about new services and they in return use provided services and give feedbacks and ideas for improvements.

7. Discussion

My finding shows that although municipality of Stavanger has mentioned citizens' involvement as one of the drivers of Stavanger smart city development, there is not any clear definition of citizens' involvement in the roadmap, and citizens role is pictured only as "users of services" and "creative contributors" to the development of better solutions and services (MunicipalityOfStavanger, 2016). The findings of this thesis shows that in mobility point project, citizens' roles has not gone further than consumers and data points due to a number of reasons. First of all, citizens have not been considered as a main actor in the project from the beginning. Second, the project has been shaped by an assumption by municipality without including the citizens, that the pain point of not using public transport as it is expected by municipality, is that switching from one mode of public transportation to the other one is difficult and if this pain point appropriately be addressed by municipality and Kolumbus as two main actor of the project, use of public transport will be increased and use of private car will be decreased which eventually contributes the city with lowering CO_2 emissions. This has been done without collaboration of other actors specially citizens.

Third, to tackle this pain point, mobility point concept already used in two other cities in Norway, Bergen and Oslo was introduced as the solution, again without including other potential actors. With adjusting the concept, a bit and put more emphasize on E-bikes that sharing cars which was the focus of the other two cases, mobility point was defined by municipality as a place in which citizens can find e-bikes, e-scooters and sharing car in Hillevåg square which is close to a bus stop as well.

Besides, for choosing the location of mobility point citizens were not either involved and the decision was made by municipality and it is believed that citizens are not best ones to make this kind of decisions. Even about the areas in square in which different services should be located, although citizens were asked for ideas, their suggestions could not be applied and one of the interviewees from municipality mentioned "it finally became a mess" [I2]. It is believed by municipality and Kolumbus that the locations and transportations options are given, and since citizens does not have enough knowledge and cannot see the big picture, they are not able to participate meaningfully in all aspects of the project. It can be concluded that citizens in this project did not neither have decision-making power to control the decisions in this project which

influencing their everyday live nor be empowered to play an active part in making decision (more information (Gohari et al., 2020)).

In addition, the project was defined as a prototype with this intention that this concept is tested in this square and get adjusted through time *after* citizens started to use the services. Therefore, citizens engagement starts from the point that citizens start using the services and all they need to do is to use the services and give honest feedback. There is no need for their involvement beforehand because municipality believes that people have difficulty in expressing their needs it is better to make a prototype or provide a service for them and then check the results to find out if they like or do not like the service.

This shows that main actors (municipality and Kolumbus) are aiming at changing the behavior (use more public transport, use less car) of citizens (consumers, data points) of a specific area (Hillevåg) by offering a service (mobility point) to reach city goals (less Co2 emissions).
Figure 6 illustrates citizens' engagement state in mobility point project.
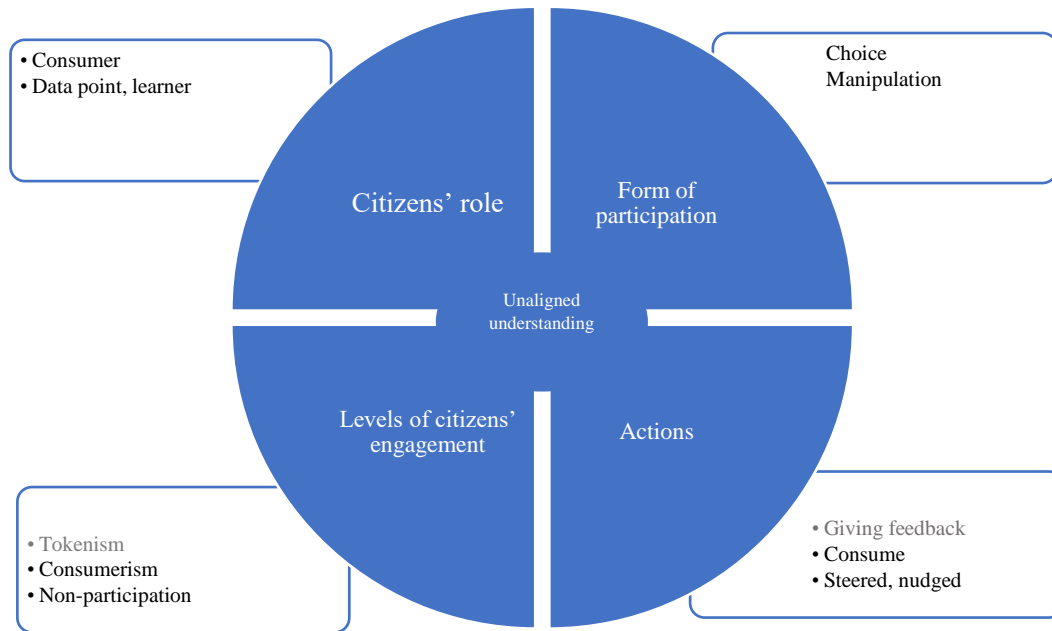

Figure 6 Citizens' engagement state in mobility point project (Author's own contribution)

Although municipality tried to involve the citizens in the project, and there is still a questionnaire posted in the square that citizens can scan the barcode and share their experience, but my finding shows that levels of citizens' engagement in this project has been non-participation and

consumerism and barely tokenism level. There is not any participation expected from citizens at the early stage which makes citizens to be only consumers, customers, and users (more information (René Glas, 2019)). Therefore, citizens in this project play the role of either consumers or data points and at one point they were also asked for ideas and feedbacks which can be said they had participant and proposer's role at that point. In terms of activities, citizens consumed as consumers, and were steered and nudged by main actors. When it comes to form of citizens participation, citizens were involved with the lowest forms of participation, choice and manipulation in which citizens have access to different options of public transport provided for them in mobility point in Hillevåg to choose from.

There are other reasons why citizens' participation is as it is if we look at the core element of the conceptual model. First of all, "to the people," ideology has been dominated in this project in which municipality used mobility point concept to meet the needs of the people, not "with the people" ideology by which a collective thinking of different actors including citizens discover and resolve problems (Malek et al., 2021). Although developing a smart city calls for collaboration of different stakeholders in various levels such as authorities, policy makers, companies, academic as well as citizens, there has not been enough effort in making this collaboration. In addition, each of these groups of stakeholders have different definitions, interests, goals and expectations (as I explained in finding section) which needs to be integrated and aligned in a discussion on why, what and how the solution should be planned and executed, hence cities can make sure that more diverse visions and perspective have been taken into account (more information in (Anttiroiko, 2016)). In this project unfortunately there has not been a process or structure for this purpose either. When it comes to the approach of the project, it does not seem that "sociocratic" approach have been the approach of this project in which the focus is more on democracy, citizen empowerment through technology, participation and co-creation, because unfortunately main actors could not manage successfully to use technology to include citizens from beginning and empower them as they learn, get informed, and empowered (more information in (Cardullo & Kitchin, 2019)). Since two main actors shaped a solution for citizens with minimum involvement of them, it can be concluded that this project has been an example of a space being made *for* citizens rather than *by or with* us (more information (Kempin Reuter, 2019)). Besides, since there has not been any communication process for informing the citizens about the provided services in the square, most of the citizens of Hillevåg area might not even be aware of services (more information

(Ranchordás, 2019)). Besides, since the goal of this project initially has been to reduce CO_2 emissions, this project stressed more on environmental dimensions of sustainability that on social, equity and democracy (more information (Carvalho, 2015)) which shows that municipality has had a dominant role and there needs to make a balance between fulfilling social needs and city needs, or in a better word, diverse needs of different actors. It can be concluded that there has been an unaligned understanding of the project, meaning that there has not been neither proper communication, nor documentation and integration about fundamentals of the project including "various actors' definition of smart city and mobility point concept", "goals and main actors of the project", "definition of citizens' participation and its importance" as well as "motivations and expectations of participation in the project".

Table 7 lists the citizens' engagement dimensions in mobility point project highlighted in green. As the table shows citizens' engagement actions could not go further than Giving feedback, consume, steered, and nudged (A4, A5, A6). Level of citizens' engagement while could rise to citizen power and tokenism stopped at consumerism (L3, L4) and non-participation which ended up with two form of participation choice and manipulation (F6, F7) and citizens' roles as consumer, data point and learner (R7, R8).

Table 7 Covered dimensions of citizens' engagement in mobility point projects (highlighted in green)

	Dimensions	Code
Actions	Leadership, ownership	A1
	Negotiate, produce	A2
	Suggest	A3
	Giving feedback	A4
	Consume	A5
	Steered and nudged	A6
Levels of citizens' engagement	Citizen power	L1
	Tokenism	L2
	Consumerism	L3
	Non-participation	L4
Form of participation	Citizens' control	F1
	Delegated power	F2
	Partnership	F3
	Consultation	F4
	Information	F5
	Choice	F6
	Manipulation	F7
Citizens' role	Leader	R1
	Decision maker	R2
	Co-creator	R3
	Proposer	R4
	Tester, participant	R5
	Informant	R6
	Consumer	R7
	Data point, learner	R8

In order to climb up the ladder and have a better citizens' engagement in this project, municipality could do several activities. Starting point of projects could be from citizens, by asking questions about what they really need, how they really see Hillevåg square, how they want this square to be improved for them. As many citizens as possible needs to be included to make sure, the voice of most of the citizens have been heard. By running a digital channel of communication, interacting with people can get started according to their availability not working hours in municipality. To know citizens' and their needs sometimes is better to come out of the office and talk to people. It is very important to inform them in a proper way if any change is planning in their neighborhood. Before sending the message, it is good to check if the letter needs to be in other languages than Norwegian and open a room for discussion about that information. It is very important to have confidence in citizens that they can contribute and make them aware about how new technology and smart city projects might affect their life and listen to their concerns. Closing the loop of communication by sending feedback on citizens' comments shows them that they have been heard

even if the answer to their request is negative. In order to do the above-mentioned activities, there is a need for a process and structure in municipality to involve all the players in the projects and make a smooth, effective and efficient communication. There is also need for skillful resources as process owners and finical resources supporting the process. Municipality also can challenge the companies with finding a creative way of engaging citizens in their projects as a deliverable in addition to the other deliverables of the projects. Instead of defining and deciding how citizens to be involved it is good to involve citizens themselves and ask them how they prefer to be involved and shape the engagement process by them. Citizens' engagement and including different actors of the project to reach an aligned understanding and form the project brings a lot of conflicts and needs to be managed effectively. There might be a confusion about the level of inclusion and citizens might need to get knowledge before engagement and there might be other prerequisites depending on the project that all needs to be planned.

8. Conclusion

The purpose of this research was to find out how is process of citizens' engagement in mobility point project and why it is as it is. While Stavanger smart city development has started almost five years ago and citizens involvement has been introduced as one of the drivers of smart city development, there has been only different fragmented initiatives focusing on training students and municipality employees and there is not any framework, process or structure for citizens' involvements either centrally in municipality as a part of a smart city project.

In mobility point project, only municipality of Stavanger and Kolumbus have had an active role and it has been municipality's responsibility to engage citizens in the project. Private sector and citizens have had a passive role. Private organization provided services such as sharing cars and e-scooters and citizens were playing the role of consumers. Although at one-point department of smart city in municipality of Stavanger interviewed six citizens to ask for their ideas and posted a questionnaire in the square asking citizens for feedbacks, it does not seem that there has been a formal structure or process for citizens engagement similar to cases such as citizen-centric bikeshare in Hamilton, Ontario by Bradshaw and Kitchin (2021). Even though municipality aims at promoting citizens' involvement but in practice main actors believe that citizens are not capable of making decisions such as the location of mobility points and limit their contribution to use of the services and giving feedback. In a better word, citizens are not considered main actors and only are seen as users and beneficiaries of better services (for example (Coletta et al., 2018)).

As it was explained in finding section, different actors including municipality of Stavanger, Kolumbus, citizens and private companies have different understanding of the project. There has not been any alignment and integration among different actors and at any point. There has been some coordination among different organization in public sector in this project but there has not been any alignment with private organizations or citizens. There is a need for a department or a team in each project with good understanding of the city to take the leadership role and put it all together. "In this way, knowledge, expertise and technology become a collaborative endeavor which operates through universities, civic organizations, bureaucrats, technologies, environmental groups, community advocates and citizens" (Bradshaw & Kitchin, 2021, p. 15). Cardullo & Kitchin believes that citizens' engagement is a "trajectory" that citizens take in different smart city projects rather than a "zigzagging path of creative destruction" and this trajectory needs to be conceptualized, designed and implemented with the support of all actors (Cardullo & Kitchin,

2019). The mobility point project has been defined as a prototype to be tested. As several interviewees mentioned, it has several advantages. In a cheap and quick way, you can get a service tested and improved or removed. However, there are some risks in defining a smart city project in this way. First of all, urban space is becoming a laboratory for testing a smart city project (extreme case can be IOT sensors), run by public and private organizations with the aim of tackling a city problem (Coletta et al., 2018) without informing citizens about such activities. This is also in alignment with this belief that main actors "use citizens as beta-testers of solutions, products, or policies" (Gohari et al., 2020). Secondly, a solution is set (in this case mobility point) before giving the chance to citizens to state their problems and suggestions to be taken into account (Cardullo & Kitchin, 2019). Besides, the main purpose of prototype was to test and improve a *service*. What if testing citizens' engagement process was a part of testing in prototype as well. Meaning that protype could be defined as a platform to test and improve collaborative design, participatory form of governance and citizens' engagement (similar to Bradshaw and Kitchin (2021)) rather than focusing only on testing and improving pre-decided services in mobility point project.

In addition, prototype needs to get adjusted, as it was mentioned in finding section, due to lack of resources and skills in municipality to analyze, discuss and apply adjustments there was not any changes after the first prototype was launched. This is in alignment with Kitchin argument which believes that "public sector is behind the technology curve with respect to state-of-the-art ideas and systems for managing cities, and they do not have sufficient knowledge, skills, resources or capacity to deliver or maintain services" (Kitchin et al., 2017b) quoted by Cardullo and Kitchin (2019, p. 822). There has been only one change in this project. One of the private organizations removed his services after they found out that their e-scooters were idle more than 48 hours and they were losing money. Citizens have not been properly informed about these new services by municipality, that might be the reason for not using this service. It was mentioned by several citizens that they have not been informed and sometimes there is not any instructions of how to use these services and if there is any it is only in Norwegian.

In this prototype municipality has given citizens several choices of public transport in Hillevåg square that citizens can choose from which means citizens' form of participation have been choice and manipulation. In this way, there is a risk that citizens have choices instead of rights , and they are framed increasingly as consumers (Cardullo & Kitchin, 2019) and learners. Looking at citizens in this way, is far from an influential concept built by Lefebvre (1996), pointing out this idea that

"citizens should not just have the right to occupy and use space, but that space should be shaped according to its inhabitants' needs and the ideal city is a city that guarantees the right for inhabitants to participate fully in the production of urban space" as quoted in (Cardullo & Kitchin, 2019, p. 818).

What is seen in this project is that citizens are considered consumers consuming the service or learners being nudged and steered with the aim of educating them to adopt a certain behavior according the project goals which is to use less car, and more public transport, eventually less CO_2 emissions, while they have no control over decision making process on how to fulfill mentioned city goals and what their preferences are.

If municipality keep citizens' participation level as it is and does not take initiatives to climb to higher levels and forms of engagement, in the long run citizens would be the "potential losers, they lose their right to the city in which they live" (Moser, 2015) as quoted in (Kummitha & Crutzen, 2017, p. 48).

As one of the interviewees in municipality of Stavanger mentioned there is a need for a paradigm shift and devoting more time and resource for actual citizens' engagement purpose. At the moment, citizens' involvement can only start after getting a project funded. Due to this process, there is no chance to define the project with citizens' involvement. As Cardullo & Kitchin argue, it is unlikely that citizens be consulted before the initiative reaches the stage of market product and "any engagement that occurs after funding, even if designed to be citizen-centric, has then to meet pre-determined milestones and fulfil the deliverables of the contract, meaning citizens have limited scope to reframe the initiative around their concerns and desires" (Cardullo & Kitchin, 2019, p. 820).

There have been some limitations in doing this research. First and main limitation of this project is that I had a chance to interview only with 12 individuals and from them just four were citizens. The other limitation was that although I visited the square several times, but due to Covid 19 I had to do interviews with citizens online. It was better if I could meet people in the square and do the interview on site, in this way the interview was more interactive, we could walk in the square and citizens could show me for example where they preferred the services be located for them and why they like or do not like the current locations.

Citizen's engagement is a new and complex topic and there is a need for more research in this area. For future research I suggest looking into following questions:

Who should be involved in smart city projects and how this decision should be made and by whom? What is the appropriate level of engagement?

What is a good process for citizens involvement? What needs to be considered in defining, developing and implementing this process? How an engagement process is different from one project to another?

Does form, level, role and activities in each project should be different or citizens needs to be engaged at the top level, form and role? In any cases why? Who does make decision about this matter, how and why?

Does citizens' engagement have the same importance in each project? If it differs what does determine this difference?

What are the prerequisites for citizens' engagement? Should citizens get smart as cities get smart? Why and how?

How to handle conflicts among different actors efficiently and effectively?

9. References

Anttiroiko, A.-V. (2016). City-as-a-Platform: The Rise of Participatory Innovation Platforms in Finnish Cities. *Sustainability, 8*(9). https://doi.org/10.3390/su8090922

Baxter, P., & Jack, S. (2008). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers *The Qualitative Report*. https://nsuworks.nova.edu/tqr/vol13/iss4/2/

Borkowska, K., & Osborne, M. (2018). Locating the fourth helix: Rethinking the role of civil society in developing smart learning cities. *International Review of Education, 64*(3), 355-372. https://doi.org/10.1007/s11159-018-9723-0

Bradshaw, R., & Kitchin, R. (2021). Charting the design and implementation of the smart city: the case of citizen-centric bikeshare in Hamilton, Ontario. *Urban Geography*, 1-23. https://doi.org/10.1080/02723638.2021.1878439

Bull, R., Dooley, K., Mazhar, M., & Preston, S. (2020). Digitally Engaged? Reflections and recommendations for engaging citizens in smart cities. *IOP Conference Series. Earth and Environmental Science, 588*(2). https://doi.org/10.1088/1755-1315/588/2/022002

Caragliu, A., & Del Bo, C. (2012). Smartness and European urban performance: assessing the local impacts of smart urban attributes. *Innovation: The European Journal of Social Science Research, 25*(2), 97-113. https://doi.org/10.1080/13511610.2012.660323

Caragliu, A., Del Bo, C., & Nijkamp, P. (2011). Smart Cities in Europe. *Journal of Urban Technology, 18*(2), 65-82. https://doi.org/10.1080/10630732.2011.601117

Cardullo, P., & Kitchin, R. (2018). Being a 'citizen' in the smart city: up and down the scaffold of smart citizen participation in Dublin, Ireland. *GeoJournal, 84*(1), 1-13. https://doi.org/10.1007/s10708-018-9845-8

Cardullo, P., & Kitchin, R. (2019). Smart urbanism and smart citizenship: The neoliberal logic of 'citizen-focused' smart cities in Europe. *Environment and Planning C: Politics and Space, 37*(5), 813-830. https://doi.org/10.1177/0263774x18806508

Carvalho, L. (2015). Smart cities from scratch? A socio-technical perspective. *Cambridge Journal of Regions, Economy and Society, 8*(1), 43-60. https://doi.org/10.1093/cjres/rsu010

Clever, S., Crago, T., Polka, A., Al-Jaroodi, J., & Mohamed, N. (2018). Ethical Analyses of Smart City Applications. *Urban Science, 2*(4). https://doi.org/10.3390/urbansci2040096

Coletta, C., Heaphy, L., & Kitchin, R. (2018). From the accidental to articulated smart city: The creation and work of 'Smart Dublin'. *European Urban and Regional Studies, 26*(4), 349-364. https://doi.org/10.1177/0969776418785214

Elelman, R., & Feldman, D. L. (2018). The future of citizen engagement in cities—The council of citizen engagement in sustainable urban strategies (ConCensus). *Futures, 101*, 80-91. https://doi.org/10.1016/j.futures.2018.06.012

Glasmeier, A., & Christopherson, S. (2015). Thinking about smart cities. *Cambridge Journal of Regions, Economy and Society, 8*(1), 3-12. https://doi.org/10.1093/cjres/rsu034

Gohari, S., Baer, D., Nielsen, B. F., Gilcher, E., & Situmorang, W. Z. (2020). Prevailing Approaches and Practices of Citizen Participation in Smart City Projects: Lessons from Trondheim, Norway. *Infrastructures, 5*(4). https://doi.org/10.3390/infrastructures5040036

Goodman, N., Zwick, A., Spicer, Z., & Carlsen, N. (2020). Public engagement in smart city development: Lessons from communities in Canada's Smart City Challenge. *The Canadian Geographer / Le Géographe canadien, 64*(3), 416-432. https://doi.org/10.1111/cag.12607

Goodspeed, R. (2015). Smart cities: moving beyond urban cybernetics to tackle wicked problems: Figure 1. *Cambridge Journal of Regions, Economy and Society, 8*(1), 79-92. https://doi.org/10.1093/cjres/rsu013

Hollands, R. G. (2008, 2008/12/01). Will the real smart city please stand up? *City, 12*(3), 303-320. https://doi.org/10.1080/13604810802479126

Hollands, R. G. (2015). Critical interventions into the corporate smart city. *Cambridge Journal of Regions, Economy and Society, 8*(1), 61-77. https://doi.org/10.1093/cjres/rsu011

Kaulio, M. A. (1998). Customer, consumer and user involvement in product development: A framework and a review of selected methods. *Total Quality Management, 9*(1), 141-149. https://doi.org/10.1080/0954412989333

Kempin Reuter, T. (2019). Human rights and the city: Including marginalized communities in urban development and smart cities. *Journal of Human Rights, 18*(4), 382-402. https://doi.org/10.1080/14754835.2019.1629887

Kitchin, R. (2015). Making sense of smart cities: addressing present shortcomings. *Cambridge Journal of Regions, Economy and Society, 8*(1), 131-136. https://doi.org/10.1093/cjres/rsu027

Kitchin, R., & Moore-Cherry, N. (2020). Fragmented governance, the urban data ecosystem and smart city-regions: the case of Metropolitan Boston. *Regional Studies*, 1-11. https://doi.org/10.1080/00343404.2020.1735627

Kummitha, R. K. R., & Crutzen, N. (2017). How do we understand smart cities? An evolutionary perspective. *Cities, 67*, 43-52. https://doi.org/10.1016/j.cities.2017.04.010

Lee, J. Y., Woods, O., & Kong, L. (2020). Towards more inclusive smart cities: Reconciling the divergent realities of data and discourse at the margins. *Geography Compass, 14*(9). https://doi.org/10.1111/gec3.12504

Lefebvre, H. (1996). Writings on Cities. *Cambridge, Blackwell*.

Levenda, A. M., Keough, N., Rock, M., & Miller, B. (2020). Rethinking public participation in the smart city. *The Canadian Geographer / Le Géographe canadien, 64*(3), 344-358. https://doi.org/10.1111/cag.12601

Luque-Vega, L. F., Carlos-Mancilla, M. A., Payán-Quiñónez, V. G., & Lopez-Neri, E. (2020). Smart Cities Oriented Project Planning and Evaluation Methodology Driven by Citizen Perception—IoT Smart Mobility Case. *Sustainability, 12*(17). https://doi.org/10.3390/su12177088

Malek, J. A., Lim, S. B., & Yigitcanlar, T. (2021). Social Inclusion Indicators for Building Citizen-Centric Smart Cities: A Systematic Literature Review. *Sustainability, 13*(1). https://doi.org/10.3390/su13010376

Moser, S. (2015). New cities: Old wine in new bottles? . *Dialogue in Human Geography, 5*(1), 31–35.

MunicipalityOfStavanger. (2016). Roadmap of the smart city Stavanger. https://www.stavanger.kommune.no/siteassets/samfunnsutvikling/planer/engelske-planer/roadmap-smart-city-stavanger-2016.pdf

MunicipalityofStavanger. (2020a). Halvårsrapport høst https://www.stavanger.kommune.no/samfunnsutvikling/smartbyen-stavanger/halvarsrapport/halvarsrapport-host-20202/#15607

MunicipalityofStavanger. (2020b). Kvikktest Lervig. Kvikktest Lervig

MuniciplityOfStavanger. (2018). Smartbyen Stavanger høsten 2018. https://www.stavanger.kommune.no/samfunnsutvikling/smartbyen-stavanger/halvarsrapport/halvarsrapport-2018/#7247

Noori, N., Hoppe, T., & de Jong, M. (2020). Classifying Pathways for Smart City Development: Comparing Design, Governance and Implementation in Amsterdam, Barcelona, Dubai, and Abu Dhabi. *Sustainability, 12*(10). https://doi.org/10.3390/su12104030

Ranchordás, S. (2019). Nudging citizens through technology in smart cities. *International Review of Law, Computers & Technology, 34*(3), 254-276. https://doi.org/10.1080/13600869.2019.1590928

Simonofski, A., Serral Asensio, E., De Smedt, J., & Snoeck, M. (2018). Hearing the Voice of Citizens in Smart City Design: The CitiVoice Framework. *Business & Information Systems Engineering, 61*(6), 665-678. https://doi.org/10.1007/s12599-018-0547-z

Statistics.Norway. (2021). Stavanger Municipality population. https://www.ssb.no/kommunefakta/stavanger

StoreNorskeLeksikon. (2021, 9. April 2021). https://snl.no/Hillev%C3%A5g

Thomas, V., Wang, D., Mullagh, L., & Dunn, N. (2016). Where's Wally? In Search of Citizen Perspectives on the Smart City. *Sustainability, 8*(3). https://doi.org/10.3390/su8030207

White, S. C. (1996, 1996/02/01). Depoliticising development: The uses and abuses of participation. *Development in Practice, 6*(1), 6-15. https://doi.org/10.1080/0961452961000157564

Wikipedia. (2020). Hillevåg. https://en.wikipedia.org/wiki/Hillev%C3%A5g

Yin, R. K. (2014). Case study research : design and methods. 45-46. (5) (SAGE)

10. Appendices

10.1. Appendix 1: Information letter

Are you interested in taking part in the research project

"Citizens' engagement in smart city development
Case study: Mobility point project"?

This is an inquiry about participation in a research project where the main purpose is to describe the process of citizens' engagement in developing mobility point project, the reasons of choosing this process and finding contributing and inhibiting factors involved. In this letter we will give you information about the purpose of the project and what your participation will involve.

Purpose of the project

I am a master's student in business innovation at business school in University of Stavanger. The theme for my master's thesis is "citizens' engagement in smart city development, case study: Mobility point project" and is conducted under the supervision of Dr. Marte Cecilie Wilhelmsen Solheim, Associate Professor and Head of Stavanger Centre for Innovation Research. The purpose of this study to write a master thesis in which I will explore the answers to three main questions:

How are citizens involved in definition, development, implementation, and post implementation of mobility point project? Why is the involvement process as it is? What are the contributing factors which make this form of participation or inhibiting factors inhibiting other possible forms?

The scope of this research is a smart city project titled "mobility point" finished in December 2020. Mobility point is a place where people can find various shared means of transportation that suit their journey. The purpose of this project is to develop a mobility point in Hillevåg that makes it easier to travel without a private car. Stavanger's smart city department, environmental department, park and road, urban development, områdeløfte in Hillevåg, Bilkollektivet and Kolumbus have been involved in this project.

Who is responsible for the research project?

University of Stavanger is the institution responsible for the project.

Why are you being asked to participate?

You have been selected due to either your active participation in mobility point project, having formal power to influence the process and outcome of the project, or holding important information of the project or have been influenced by the result of the project

I found your contact information either from smart city project web page or got from other interviewees. I asked them to contact you first and make sure you are interested in participating before I contact you.

What does participation involve for you?

If you chose to take part in the project, this will involve that you participate in a semi-structured online interview. The interview will be performed online using Microsoft teams or zoom. It will take approx. 45 minutes. The interview includes questions about the process of citizens' engagement in developing mobility point project, the reasons of choosing this process and finding contributing and inhibiting factors involved. Your answers will be recorded electronically.

Participation is voluntary
Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will be no negative consequences for you if you chose not to participate or later decide to withdraw.

Your personal privacy – how we will store and use your personal data
We will only use your personal data for the purpose(s) specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act).
The Norwegian center for research data has been notified about this research. I, my supervisor and data processor, Microsoft teams or zoom, have access to data. I will replace your name and contact details with a code and the list of names contact details and respective codes will be stored separately from the rest of the collected data.
The result of this research is expected to be published as a journal article. In the article, there would be no direct attribution to interviewees and interviewees' information will be kept fully confidential and no individual will be able to be recognized in the thesis. After the journal article got published, all data will eventually be removed.

What will happen to your personal data at the end of the research project?
The project is scheduled to end on 06.07.2021 the data material will be anonymized by deleting names, e-mail addresses and audio recordings, and by background information being recoded in such a way that individuals cannot be recognized.
Your rights
So long as you can be identified in the collected data, you have the right to:
- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

What gives us the right to process your personal data?
We will process your personal data based on your consent.
Based on an agreement with University of Stavanger, NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation.

Where can I find out more?
If you have questions about the project, or want to exercise your rights, contact:
- Leila Beig, Student at UiS, mobile: 92533602, e-mail: l.beig@stud.uis.no. My supervisor, Marte C. W. Solheim at University of Stavanger, phone number 97002235, e-mail marte.solheim@uis.no.
- Our Data Protection Officer: Rolf Jegervatn, rolf.jegervatn@uis.no
- NSD – The Norwegian Centre for Research Data AS, by email: (personverntjenester@nsd.no) or by telephone: +47 55 58 21 17.

Yours sincerely,

Project Leader   Student
Marte C. W. Solheim   Leila Beig

Consent form

I have received and understood information about the project "Citizens' engagement in smart city development, Case study: Mobility point project", and have been given the opportunity to ask questions.
I give consent to participate in an online interview.
I give consent for my personal data to be processed until the end date of the project, 06.07.2021

(Signed by participant, date)

10.2.   Appendix 2: Interview guide

The purpose of this study is to write a master thesis in which I will explore the answers to three main questions: How are citizens involved in definition, development, implementation, and post implementation of mobility point project? Why is the involvement process as it is? What are the contributing factors which make this form of participation or inhibiting factors inhibiting other possible forms?

The scope of this research is a smart city project titled "mobility point" finished in December 2020. Mobility point is a place where people can find various shared means of transportation that suit their journey. The purpose of this project is to develop a mobility point in Hillevåg that makes it easier to travel without a private car. Stavanger's smart city department, environmental department, park and road, urban development, områdeløfte in Hillevåg, Bilkollektivet and Kolumbus have been involved in this project.

Three groups tied to this project will be interviewed, (a) four individuals in municipality of Stavanger in charge of mobility point project, (b) four individuals from Kolumbus, in charge of delivering mobility point project, and (c) four citizens engaged in this project.

For choosing interviewees in public and private sector, "nonprobability purposive expert sampling method" has been used in which individuals are selected intentionally (Gohari et al., 2020) either due to their formal power to influence the process and outcome of the project, or holding important information or knowledge of the project. However, citizens are chosen among the ones who have been participating in the project development or have been influenced by the result of the project according to their availability or tendency to participate in interview.

Interviewees are contacted by email and questions are emailed in advance. Although some questions are predefined, in order to discover new ideas as well, the interviews will remain open, in a form of conversational, and two-way communications, and lasts approximately 45 minutes. The interviews are performed online on teams or zoom, and they are recorded with the consent of the interviewees. It will be mentioned to the interviewees that in the thesis there would be no direct attribution to interviewees.

After interviews, the recorded voice are transcribed and emailed to corresponding interviewees for final check and validation. Three individual questionnaires have been prepared, one for municipality, one for private companies and one for citizens. Questionnaires can be found in following.

Personal   information

First name

Last name

Company name

Position

Years of experience

Education

Field of study

Age

Gender

Email address

Questionnaire for municipality of Stavanger

Part 1: General questions

1. How do you define Stavanger smart city?
2. What are the main goals of Stavanger smart city?
3. Who are the main actors (public and private sectors, or citizens) involved in definition of Stavanger smart city projects? Who are the main actors involved in development, and implementation?
4. How are they involved, with what role, in which form, type, level and through which process?
5. What are municipality's interest in developing smart cities?
6. Do you know what might be other actors' interests in (partcipating in) developing smart cities?
7. What does "citizens' participation in developing smart cities" mean in your opinion? How important do you think it is?

Part 2: Specific questions related to mobility point project

8. You have had an active role in mobility point project, how this project initiated? What was the main reason/motivation behind starting this project?
9. Who have been the main actors (public and private sectors, or citizens) involved in definition of this project? Who are the main actors involved in development, and implementation?
10. How have they been involved, with what role, in which form, type, level and through which process?
11. Do you know what might be each actors' interests in partcipating in this project?

12. How do you think companies and citizens could support municipality in improving their participation in the mentioned project? What are your expectations from citizens? What are your expectations from companies?

13. How have you facilitated their contribution? Have you had any formal structure, or process for this purpose?

14. Are you aware of any challenges which needs to be addressed in order to prevent any barriers for meaningful participation of all parties? Who (and how) do you think (they) can support you to overcome those challenges?

15. How do you evaluate citizen and companies' engagement in this project? Do you think current practices are satisfactory? What do you think should be done to improve participation?

Questionnaire for private sector

Part 1: General questions

1. How do you define Stavanger smart city?
2. What do you think are/should be the main goals of Stavanger smart city?
3. Who are the main actors (public and private sectors, or citizens) involved in definition of Stavanger smart city projects? Who are the main actors involved in development, and implementation?
4. How are they involved, with what role, in which form, type, level and through which process?
5. What are company's motivation in participating in developing smart cities?
6. Do you know what might be other actors' such as public sectors and citizens' motivation in (partcipating in) developing smart cities?
7. What does "citizens' participation in developing smart cities" mean in your opinion? How important do you think it is?

Part 2: Specific questions related to mobility point project

8. You have had an active role in mobility point project, how this project initiated? What was the main reason/motivation behind starting this project?
9. Who have been the main actors (public and private sectors, or citizens) involved in definition of this project? Who have been the main actors involved in development, and implementation?
10. Do you know what might be each actors' interests in partcipating in this project?
11. How have they been involved, with what role, in which form, type, level and through which process?
12. How do you think municipality and citizens could support your comany in improving their participation in the mentioned project? What are your expectations from citizens? What are your expectations from companies?
13. How do you think you could facilitate their contribution? Have you had any formal structure, or process for this purpose?

14. Are you aware of any challenges which needs to be addressed in order to prevent any barriers for meaningful participation of all parties? Who (and how) do you think (they) can support you to overcome those challenges?

15. How do you evaluate citizen and companies' engagement in this project? Do you think current practices are satisfactory? What do you think should be done to improve participation?

Questionnaire for citizens

Part 1: General questions

1. How do you define a smart city?
2. What can/should be the main goals of a smart city?
3. Do you know who are the main actors (public and private sectors, or citizens) involved in the Stavanger smart city projects?
4. Do you know how they are involved and what is each actor's role? Do you know how you can/should be involved?
5. What is your expectation from (interest in) smart cities? What do you think needs to be improved or change in Stavanger to be transformed into a smart city?
6. Do you know what might be other actors' such as private and public sectors' interests in (partcicpating in) developing smart cities?
7. Are you interested in having more information about the projects and the process of the developing Stavanger smart city? How do you like to be informed?
8. Do you like to participate in the process of smart city development? Do you think it is important to participate?
9. What does citizen participation mean in your opinion?
10. How do you like to participate? What is or should be the role of citizens? Do you like to participate in decision making for devoting budget in projects for example?

Part 2: Specific questions related to mobility point project

11. You have been participating in mobility point project, how have you been informed about this project and the possibility to participate?
12. In the mentioned project how was your participation? What was your role?
13. Was there any process or structure for your participation?
14. How do you evaluate citizen engagement in the mentioned project? Are the current practices satisfactory?
15. Are you aware of any challenges which needs to be addressed in order to prevent any barriers for meaningful participation of citizens? Who (and how) do you think (they) can support you to tackle those challenges?
16. How do think your participation can/should be facilitated? What are your expectations from municipality? What are your expectations from companies?
17. What do you think you can do to improve this participation?

10.3. Appendix 3 Municipality questionnaire

Municipality questionaires accessible through QR code

Questionnaire 1

Hillevåg square is the site of Stavanger's first mobility point. Basically, nothing is set, there is room to change some of the layout, remove an offer or add an offer.

1.Do you live near Hillevåg square?

2.How close to Hillevåg square do you live?

3.How do you use the square? (More choices possible)

- Go through,
- Agree to meet others here
- Park my car
- Uses the park
- Other

4.From 1 - 5, what do you think of Hillevåg torg?

Bad

Absolutely great

5.How can Hillevåg square become more attractive to you? (More choices possible)

- Something for the kids to do
- A coffee cart in the morning
- Second-hand market on weekends
- Byttebu
- Other

6.Have you used any of the mobility services associated with Hillevåg torg?

7.If you have used any of the services, which ones have you used? (More choices possible)

- Buss
- Sharing car

- City bike
- Scooter
- Bike parking
- Car parking

8.Which of the services do you use the most? (More choices possible)

9.From 1 - 5, what do you think about the fact that we have gathered mobility services on Hillevåg square?

10.Based on your answer to the previous question, why do you think so?

11.Have you used Norway Post's parcel machine on the square? (More choices possible)

12.What does it take for you to leave your car at home and use other mobility solutions?
Enter your answer

13.What do you think is missing on Hillevåg square?

Questionnaire 2

Have you tested the mobility point on Hillevåg square?

Then we would like to hear about your experience!

1.Tell us about your experience, what you liked and suggestions for improvements